RĀMĀYAṆA : A STUDY IN ANCIENT INDIAN GEOGRAPHY

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SCHEME OF TRANSLITERATION

Whereas all extracts from the original Sanskrit works and also various technical terms and phrases are given in the Roman characters in this work, the mode of Transliteration adopted while doing so, is noted below for easy reference:

अ	a	क्	k	त्	t	ष्	ṣ
आ	ā	ख्	kh	थ्	th	स्	s
इ	i	ग्	g	द्	d	ह	h
ई	ī	घ्	gh	ध्	dh	क्ष	kṣ or ksh
उ	u	ङ्	ṅ	न्	n	त्र	tra
ऊ	ū	च्	c	प्	p	ज्ञ	j̃ña or gya
ऋ	ri or ṛ	छ्	ch	फ्	ph	श्र	śra or shra
ॠ	rī or ṝ	ज्	j	ब्	b		
ऌ	lri or lṛ	झ्	jh	भ्	bh		
ए	e	ञ्	ñ	म्	m		
ऐ	ai	ट्	ṭ	य्	y		
ओ	o	ठ्	ṭh	र्	r		
औ	au	ड्	ḍ	ल्	l		
ं	ṁ or ṇ	ढ्	ḍh	व्	v		
ः	ḥ	ण्	ṇ	श्	ś or sh		

N.B. The above transliteration scheme is based on 'A Sanskrit-English Dictionary' compiled by M.M. Williams (1981) with some modifications.

MODE OF CITATIONS

In case of the Rāmāyaṇa citations are given by reference to Kāṇḍas (Books), Sargas (Cantos) and Ślokas (Verses). References to the Kāṇḍas, Sargas and Ślokas have been separated by the dot stroke. To take an example in IV.4.13 the first figure refers to the Kāṇḍas (i.e. Kiṣkindhā Kāṇḍa), the second to the Canto (i.e. fourth) and the last to the verse (i.e. thirteenth verse). In all cases the references are from the Gita Press edition of the Rāmāyaṇa. Comparative references are indicated by the abbreviation 'Cf.'

ABBREVIATIONS

Cf.	-	Compare
ff.	-	Following
Fn/S.	-	Foot-note/s
ICWTC	-	India's Contribution to World Thought and Culture
JAOS	-	Journal of the American Oriental Society
JRAS	-	Journal of Royal Asiatic Society of Great Britain and Ireland
N.B.	-	Nota bene
N.G.S.I.	-	National Geographical Society of India
No/S	-	Number/s
p.	-	Page
pp.	-	Pages
Rām.	-	Rāmāyaṇa
Rig.	-	Rigveda
Śat.Brā.	-	Śatapatha Brāhmaṇa

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INTRODUCTION

INTRODUCTION

Geography is considered to be the study of spatial organization expressed through processes and patterns of the earth surface. The spatial organization is multi-dimensional and time, the fourth dimension, plays vital role in determining the personality of a region. A comprehensive study of a region may be complete only when facts behind the facts have been systematically investigated and correlations properly established. In this context, the historical geography of India naturally means to reconstruct the geography of the past.

India, indeed, offers a vast scope for the study of historical geography because of the paucity of geographical investigations into its historical past spreading over a few thousand years. The Rāmāyaṇa of Vālmīki marks an important period of Indian history and highlights the physical and cultural landscapes as existing during that age. Its study from a geographical point of view is fascinating to provide an explanation to the evolution of the present lanscape of the country.

The Rāmāyaṇa is regarded as Ādi-Kāvya (the first poetic composition) of classical sanskrit literature. Undoubtedly, we have the earliest picture of Indian culture and civilization in Vedic literature which appears to be indistinct and vague to provide succinctly a direct relation to the present pattern of Indian culture, the fundamentals of which are indeed ~~in it~~ concealed in it. The credit goes to the Rāmāyaṇa which presents

before us the clear picture of Aryan and non-Aryan cultures and civilization not only of the Rāmāyaṇic age but also of the times anterior. Besides, it marvellously correlates to the present culture of India. The epic marks out the most splendid informations relating to its geographical, social and political institutions.

As far as the date of composition of the Rāmāyaṇa is concerned, it may be mentioned that the epic[1] obviously recognises the Vedas and the Vedāṅgas as its antecedent literature. The Vedic period is generally believed to have ended by the sixth century B.C. Secondly, the Rāmāyaṇa displays no familiarity with Buddha or Buddhism[2]. Thirdly, there is no reference to the Mahābhārata or its characters while the Mahābhārata[3] refers to Vālmīki and characters of the Rāmāyaṇa with a summary of Rāmakathā. Moreover, a large number of non-Pāṇinian grammatical forms in the Rāmāyaṇa also point out that the composition of the epic took place prior to the age of Pāṇini (5th Century B.C.). In view of the above facts, we may ascribe the age of the epic composition to be the sixth century B.C. - a view which is tenable according to many historians and antiquarians.

The Rāmāyaṇa of Vālmīki is available in three recensions- the dākṣiṇātya, the baṅgīya and the paścimottarīya. Of these the dākṣiṇātya recension published by the Nirṇaya Sāgara, Bombay with the Tilaka commentary in 1930 has long been the most popular recension. The baṅgīya recension was published by Dr. Goressio in Italian characters in 1847 and by Pandita Pancanana Tarkaratna in Bengali characters in 1908. The paścimottarīya recension was

published by Pandita Bhagavad Datta, Ramlabhaya and others from Lahore in 1931. Recently, the Gita Press Gorakhpur has undertaken to bring forth a critical edition of the Rāmāyaṇa based on dākṣiṇātya recension both in Hindi and English commentaries in 1960 and 1969 respectively which preserves better readings and better order of narration and is very much popular in Hindi speaking areas of India, therefore, the present study is based on authentic English version of the Rāmāyaṇa published by Gita Press, Gorakhpur.

(a) Need and Importance of the Present Study

The science of geography has made great advancement in the present time, still the studies in Historical Geography of some of the countries of the world are still lacking. As such, the branch of Historical Geography is yet incomplete. India is a glaring example in this context. There has been a long tradition among the scholars of many other disciplines like History, Archaeology etc. to cull and compile "Geographic informations" from Sanskrit literature and other ancient sources, but this mode of study has ever been generally entrammelled within the limits of indexing and identification. It is remarkable that evolution of the science of geography in its proper denotation and connotation has never been systematically and logically studied by the professional geographers. The absence of a comprehensive study of the sacred and secular literature of ancient India, forms a very significant gap in the Historical Geography of the world. Here such a study is envisaged to

investigate the geographic contents scattered in the Rāmāyaṇa whose author the great sage Vālmīki appears not only the torch-light of Indian culture but a great geographer as well. He has incorporated in the Rāmāyaṇa almost all aspects of geography such as physical, human, regional and economic, the study of which is a pressing necessity of the day.

Choice of the Topic

There is ample geographical knowledge available in the books written before and after the Rāmāyaṇa. The study of the Vedas and Purāṇas has been undertaken by different scholars from the geographical point of view. The poineer work of D.P. Saxena (1960) entitled 'Ancient Indian Geography' presents a raisonne geographic picture of ancient India on the basis of the Vedic texts. B. Dube (1967) in his work 'Geographical Concepts in Ancient India' has tried to synthesize the geographical concepts in ancient India on the basis of the Vaidika, the epic, the Purāṇika and the astronomical Saṁhitā literature. Professor M.P. Tripathi (1969) in his book 'Development of Geographic Knowledge in Ancient India' has attempted to analyse the geographic knowledge of ancient India from the Vedic period up to the Jaina period. In this field the work of S.N. Pande (1980) entitled 'Geographical Horizon of the Mahābhārata' is a good piece of research displaying the geographical knowledge of the Mahābhārata times. Late Prof. S.M. Ali (1966) in his book 'Geography of the Puranas' attempts to identify the mountains, the rivers, continents and oceans, regions of Jambū dvīpa,

physical and regional description of Bhāratavarṣa as described in the Purāṇas. However, some sporadic and scattered materials collected by different scholars provide convincing identification of place names as described in the Sanskrit literature. In this connection the works of F.E. Pargiter (1894), N.C. Das (1896), N.L. Dey (1899), A. Cunningham (1871), B.C. Law (1932, 1936-37, 1942-44, 1954), D.C. Sircar (1960), V.S. Agrawal (1969), M.L. Bhargava (1964), A. Bo⌒rooah (1877), R.C. Tiwari and A.P. Jaiswal (1977, 1978, 1980) are praiseworthy as they enlighten us even now for further exploration. These works have provided valuable source material for the present work.

No serious attempt has been made to investigate the knowledge of Indian and international geography as revealed in the Rāmāyaṇa. The study of the Rāmāyaṇa from a purely geographical point of view, provides a material on which important researches can be initiated and the hidden treasures of knowledge can be brought to view. The present topic is, therefore, choosen to investigate the ignored aspects related with the geographical knowledge of the Rāmāyaṇic age with a view to providing a missing link in the Historical Geography of India. In the present work a wider imagination has been put to use and original patterns of study wherever necessary have been evolved to approach the subject from an unconventional angle. The present work is of singular nature and opens new horizons for further researches into ancient Indian Geography.

(b) OBJECTIVES

The present work forms a part of Historical Geography. It is aimed to investigate the geographical contents of the Rāmāyaṇa with a view to highlighting the ancient concepts of geography. Ths ancient scholars have endeavoured to put on record in their own primal fashion which is found in their written documents of literature, culture and civilization. The main objectives of the study are:

(i) To present the knowledge of the Universe as depicted in the Rāmāyaṇa and to compare it with the modern scientific views;

(ii) To identify the physical features as described in the epic in relation to the present concepts and locations;

(iii) To discuss the economic aspects of the Rāmāyaṇic age;

(iv) To analyse the development of means of transport and communication and locate the chief land, water and air routes;

(v) To find out the village and town planning of the Rāmāyaṇic age and to compare with modern Planning principles;

(vi) To highlight the spatial distribution of races and tribes and to assess the impact of environmental factors on the religion and culture of the epic age and

(vii) To discuss the thematic perspective of the regional concept and to deal with the regional divisions of the Rāmāyaṇic India.

(C) METHODOLOGY

The outstanding fact about the ancient Indian literature is that it does not directly mention the geographical facts but they are garbed within the religious and social expressions and performances, therefore, the first major task of a research scholar is to unveil the geographical facts by way of logical interpretation accordant with the modern scientific concepts. Secondly, the geographical concepts are not systematically given at any one place but they are scattered here and there all over the works. Hence, the researcher has to synthesize such facts to prepare a systematic treatise on geography.

Under such perennial restrains the author had to adopt the methodology of qualitative analysis of the views and practices of the people of the Rāmāyaṇic age. There is a conspicuous absence of any quantity regarding geographical facts given in the Rāmāyaṇa and, therefore, the quantitative analysis is far from possibility.

Thus, the present work is based on the qualitative analysis of the Rāmāyaṇa and consists of the texts and maps. The base of study is the Rāmāyaṇa and references for the support of the work have been collected from the Vedic and other secondary sources. For the comparative analysis of the geographical facts with the modern scientific views, the present geographical literature has been duly consulted. The maps are prepared on the basis of descriptions and informations collected from the text of the epic. The conclusions are shaped as far as possible within the parameters of the modern conceptual framework.

ORGANIZATION OF THE WORK

The Rāmāyana covers most of the spheres of geography starting from the knowledge of the universe, formation of the earth, continents and oceans, climate, vegetation, extent of the world and India and other associated physical phenomena, It also throws light upon various socio-economic activities performed by the Indians of that age. The planned settlements, social and religious system, distribution of races and tribes with their characteristics and other cultural features are also described therein.

The present work comprises of nine chapters. The first chapter 'The Universe' is divided into three parts. The first part entitled 'Cosmogony' deals with the creation and evolution of the universe. The second part covers the knowledge of the solar system and the last part focuses on the concept of the earth and the facts related to it.

The second chapter entitled 'Physiography' is divided into three parts i.e. Lithosphere, Atmosphere and Hydrosphere. In the first part an attempt has been made to describe the origin of the continents and oceans, rocks and major relief features and works of endogenetic and exogenetic forces. While dealing with atmosphere, the climatological concepts have been investigated and they are compared with the modern views. The third part includes the knowledge of the oceans, submarine topography, oceanic fauna, waves and tides.

In the third chapter entitled 'Biotic and Mineral Resources' an attempt has been made to discuss the classification,

distribution and utilization of Vegetation, animals and minerals.

The fourth chapter analyses the agricultural development, art of cultivation, means of irrigation, agricultural processes and techniques during the Rāmāyaṇic age.

Chapter fifth consists of two parts. The first part deals with the means of land, water and air transport, which have a close bearing on the development of the region and affect the economic activities. The second part deals with the means of communication as developed during the Rāmāyaṇic age.

The sixth chapter highlights the development of the rural and urban settlements. It includes the study of the origin and growth of settlements and planning. It also explains the importance of forts.

Chapter seventh is devoted to 'Cultural Geography'. It consists of two parts. In the first part, classification and spatial distribution of races have been discussed and the second part explains the relationship between the religion and environment and various religious ceremonies performed by the ancients.

The eighth chapter entitled 'Regional Geography' deals with the concepts of regions, their types and extent. It also explains the horizons of the world and its regions.

The last chapter is devoted to 'Conclusion' from the foregoing chapters.

REFERENCES

1. Rām. I.1.14; I.4.6; I.5.23; I.15.2; II.2.34; II.32.15,18; IV.28.38; VII.1.18.
2. Cf. Macdonnell, A.A. (1905), 'A History of Sanskrit Literature', p. 307.
3. Mahābhārata. VII.143.67.68.

CHAPTER - I

THE UNIVERSE

THE UNIVERSE

The universe is still a mystery and man, though equipped with efficient scientific knowledge and technical tools has not succeeded as yet in knowing it fully. Right from the dawn of civilization, man has always tried to investigate the origin of the planets in the Cosmos. Thus, cosmogony and cosmology are today conceived as integral parts of geography. In different periods and climes, the speculators at different levels of civilization and culture considered and fostered diverse ideas, imaginary beliefs and scientific conceptions regarding the creation of the universe. Presently the main object is to trace out from the pages of the Rāmāyaṇa, the origin of the universe, the knowledge of the solar system and the concepts about the earth including shape, size, movement and other related facts which corroborate the modern views on subject.

(a) COSMOGONY

(i) The Origin of the Universe

The mystery of the origin of the universe has ever been a riddle to human mind and it still continues to be so. So, it is a fact that the earliest centres of civilization in the old world developed their own cosmology which was clearly speculative rather than factual. The Greeks, Egyptians, Chinese, Persians and Indians developed their concepts regarding the origin of the universe which are of great historical interest. Although, from the scientific point of view, the concepts seem

to be a matter of religion, nonetheless, they are compatible with the modern hypothesis and ascertain that the universe is very old, its evolution and devolution are cyclic and there are other systems beyond our own. The Vedas being the earliest Indian literature, contain the most ancient Indian speculation on the subject of Cosmogony and Cosmology and ancient Indian thinkers, right from the Rigvedic age up to the Rāmāyaṇic period gave considerable thought to this subject and their imagination touched the remotest corners of the universe.

The Vedas have attempted to solve the problem more or less on the same lines, the Brāhmaṇa texts deal with this riddle more from the liturgical point of view, the Upaniṣads analyse this problem purely philosophically and the Rāmāyaṇa has endeavoured to describe it in sketchy and inferior way but the approaches of the vedic people appear to be more scientific. Natural forces had a close bearing upon Aryan life from the very beginning and these forces are considered as the gods, which are postulated as the creator of the universe, but the concepts are essentially based on mythology, philosophy and theology. Obviously, the cosmogonic view of the Rāmāyaṇic age can be explained under the following heads:

I. Architectural Origin,

II. The Mechanical Origin,

III. Philosophical Origin,

IV. Instrumental Origin.

I. Architectural Origin

In the Vedic literature[1], gods are considered to be expert architects who contributed their skill to the construction and completion of the universe. Cosmic dust is mentioned as the building material for the universe. Viśvakarmā is mentioned as the chief architect who is anterior to Earth, Heaven, Asuras, gods and other animate and inanimate objects. In the Rāmāyaṇa, Brahmā is said Śilpī[2] who created the universe[3] in the architectural manner.

II. The Mechanical Origin

The views regarding the mechanical origin of the universe developed in the last phase of the Rigvedic period when sacrifice began to dominate Aryan life and thought. It suggests the sacrifice (or disintegration) of the primeval body known as Ādi-Puruṣa who is conceived as the soul and nucleus of the universe and an embodiment of the Supreme Spirit. The Earth, the Sky, the Wind, the Moon and the Sun and all terrestrial elements were the results of the dismemberment of Ādi-Puruṣa as a part of sacrificial ceremony[4]. This view has been elaborately dealt within the Rāmāyaṇa[5]. Ādikartā (also termed as Svayamprabhuḥ - self constituted) is mentioned as the lord of creation and the first creator of the three worlds and Supreme Law Operator. He is also named as Nārāyaṇa (Himself Cosmic Person) and mentioned as imperishable Brahmā (the Absolute) and Truth, abiding at the beginning, in the middle as well as at the end. People neither know His origin nor end. He is glorious

Being endowed with thousands of feet, hundreds of heads and thousands of eyes. He is the Ātman of the universe and dominates in the past and future. On the disappearance of the earth (at the end of the Cosmic day), He is seen on a huge serpent named Śeṣa, on the water. The gods are the hair on His limbs. Night and day have been recognised as the closing and opening eyelids of the Ādikartā and the macrocosmos is His body. He is called Viṣṇu, who covered the three worlds in three strides in the past. He is the Lord of created beings and Supreme person (Puruṣottama).

III. Philosophical Origin

In the Rāmāyaṇa, important references to the philosophical origin deserve some notice and it can be evidently seen that the cosmogonic speculations are of the best order and most satisfactory containing the Vedic traditionalism. The Rāmāyaṇa[6] mentions that in the beginning of creation, water was everywhere. The earth was constructed therein. Then, self born (Svayambhū) Brahmā appeared alongwith gods. Having become a Boar, He lifted the earth and along with His sons subdued souls created everything. The eternal (Śaśvata), everlasting (Nitya) and imperishable (Avyaya) Brahmā, sprang from the sky.' Here we find the general belief of Indians that the creation started initially with water. Mention of boar in its legendary entanglement can be elucidated with the Theory of Evolution. The last sentence indicates to the creation, having been originated from the being (Sat) and not-being (Asat) or sky at the same time.

The Rāmāyaṇa further gives enunciation to the philosophical origin of the universe. Time (Kāla), the great destroyer of all, speaks to Rāma, "Thou didst, in the pristine birth, beget me on Māyā - I am Kāla, the destroyer of all, Lord Brahmā, the father of all creatures, has said thou didst promise to preserve the three worlds. Formerly when having slain all animals by the Māyā, thou went asleep in the waters of the mighty deep, I was born. Thereafter, thou didst create the huge-bodied Ananta, living in the waters as the king of serpents".[7] These lines point to four facts: (a) Creation originates and exists in a cycle, (b) Water in the primary stage, (c) creation of infinity and (d) the genesis of time as a dimension of a concrete reality.[8]

IV. The Instrumental Origin

The instrumental origin of the universe is based on the occurrence of parent bodies from which the universe was created. The Sun is the most important agent in the creation of the world and He is the soul of all that moves or does not move and identified with Brahmā, Viṣṇu, Śiva, Mahendra, Kubera, Kāla, Yama, Soma, Varuṇa, Vāyu, Prajāpati, Viśvakarmā, Avyaya and Hiraṇyagarbha. The Rāmāyaṇa[9] mentions that the Sun, who is the ruler of the worlds, constitutes created beings. He is the life-breath, the source of the seasons, the store-house of light, the nourisher of all and the one whose energy constitutes the seed of the universe. He is the source of happiness, the infuser of life in the life-less cosmic egg, all pervading and

the cause of creation, preservation and destruction of the universe. He is the ruler of all, the sender of thick showers and bears the fire of dissolution in his womb. He courses swiftly along his own orbit, carries in him the resolve to evolve the universe, he is death, (itself), the destroyer of all, omniscient, all formed, the source of all evolutes, the controller of lunar mansions, planets and stars, the creator of all, and he appears in twelve forms (in the shape of twelve months of the year). The Sun alone actually destroys, brings into existence and sustains (all) that has come into being. He is the Supreme Controller of all activities which are found in all living beings and architect of the universe who alone radiates heat by his rays. It is worth mentioning here that the central idea of the instrumental origin appears to be the creation of a cosmic nucleus - Prajāpati, the maker of the universe. This nucleus is also named as Hiranyagarbha (golden egg) which is considered as the source of the existence of all mundane and heavenly entities because it contained fire (heat) within itself.

In this study of cosmogony of the Rāmāyaṇa, it is evident that ancient Indians while treating this subject, have intermixed the mythical, metaphysics, philosophy, astronomy and geography and their methodology was not scientific from the modern point of view but they have presented the concrete realities and scientific facts because they inadvertently entered the bounds of subtle thinking of the subject and presented transcendental conceptions and explanations. Thus,

we can chaff out the relevant and advantageous material from the above mentioned concepts.

Some of the views appear to coincide with the present day cosmogonic speculations. For instance, Prajāpati - a form of the Sun, who is said to be the soul of all the animate and inanimate objects and also known as Hiranyagarbha and Viśvakarmā, is the symbolic representation of the nucleus from which the universe was created. It is important to note that the presence of water at the time of creation and destruction has been gaining favour in the cosmogonic concepts of various nations. If we interpret the epithet Hiranya (golden) as 'bright and reddish yellow' and the word 'water' as water-vapour, i.e. in its gaseous state, we find the idea of 'hot, incandescent nebula' which is the starting point of the modern cosmology.

Division

Like cosmogony, the cosmographic conception of the Rāmāyanic people was uncertain and speculative. The extent of the universe is arranged in a three-fold structure named Bhūmi (earth), the lowest region, Antariksha (atmosphere), the middle region and Diva (heaven i.e. space) the highest region.[10] The Rāmāyana also enumerates the seven upper"[11] and seven internal divisions.[12]

(ii) Stars (Tārā)

Since antiquity man has been very ardent to observe various illuminating bodies, known as the stars and planets

apparently moving round the earth every day. In the Vedic period, the ancients were incapable of enumerating the stars, but they were persistingly engaged in the subtle observation and study of the celestial sphere. Stars are visible objects always stationary in position with respect to each other. They are known as Tārā or Tārakāḥ due to their floating nature.[13] The Rāmāyaṇa furnishes a very lucid statement about the illuminating stars which adorn the sky at night, disappear during the day and can also be seen in the midst of the clouds. Besides, the Rāmāyaṇa[14] clearly mentions that during the volcanic eruptions, the lava ash covers the sky in the day and stars can be easily seen in the sky. It is clear that during the Rāmāyaṇic age, there was no suitable device to observe the stars, nonetheless, there is good account of the nature i.e. stars, constellations and other heavenly bodies.

Ursa Major (Saptarṣi Maṇḍala)

The alluring existence of Saptarṣis in the sky, instantaneously attract every observer in the night, has been taken into particular notice since the Vedic period. The word Sapatarṣi is a conjunction of two words - Sapta (seven) and Riṣi (Star) which indicates the numbers of the stars in the Saptarṣi-maṇḍala[15] (the region of Ursa major). The Rāmāyaṇa[16] mentions Ursa major with the moon and Jupiter and clearly indicates that there is a another group of seven constellations corresponding to the Great Bear coursing in the southern hemisphere.

The Pole Star

The Pole Star (Dhruva) is observed near the zenith at the North pole. From the Pole star, we can locate the true north from any point in the northern hemisphere. The Pole star is mentioned in the Rāmāyana as relatively fixed and the stars of the northern hemisphere are clearly shining and coursing clock-wise round the Pole star[17]. The milky way (galaxy) consisting of numerous larger and smaller stars is also mentioned indirectly in the Rāmāyana[18].

(iii) Constellations (Nakshatras)

The Rāmāyana being primarily a Kāvya, neither presents nor aims at presenting any systematic informations about the astronomical geography. No doubt, there are a few stray passages giving some accounts on constellations, their correlation with other planets and moral effects on the earth. Undoubtedly, astronomical observations had started earlier than the Rigveda. It must be yielded beyond any controversy that during the Vedic period, there was a separate astronomical science in existence and ancient astronomers fixed up and designated equal arcs of the ecliptic because they wanted to study intensely the apparent annual motion of the Sun, the moon and the planets with respect to the constellations. The Rāśis (the signs of the zodiac) divide the ecliptic into twelve equal parts and astronomers have divided the ecliptic into twenty seven parts, each part covering an area of 13°-20' or 800' of an arc and these parts are termed as Nakshatras. The number of

the Nakshatras is not the same in all ancient literatures. In the Vedic literature, there is mention of 27 to 28 Nakshatras. In the Rāmāyana[19] too, there is mention of 28th constellation i.e. Abhijita which consists of a very little part of Uttarā-ṣāḍha and Śravana Nakshatras and is thought to be very auspicious, but astronomers have made use of only twenty seven Nakshatras for their astronomical purposes.

All the Nakshatras are significant and some ancient legends are connected with them[20]. For instance Ārdrā means 'wet' because when the Sun enters its region, the rains set in, therefore, the Nakshatra was termed as Ārdrā. Punarvasu was so named because the grains of paddy sown in the ground sprout up as new wealth after being buried; Puṣya was so called because the young sprouts grow and become nourished; Aśleṣā because the plants of paddy have grown high enough to embrace each other; Maghā, because the paddy or other plants are putting forth the standing crop which is wealth in itself; Krittikā, because the stars under its regime of $13^{o}20'$, being six or seven, look like the skin of the spotted deer on which a religious student was to sit for Vedic study.

It is to be noted that astrological ideas are associated with the Nakshatras. The position of the heavenly bodies in relation to the constellations is supposed to be indicative of physical and moral effects on the earth. Nakshatras divide the Rāśi-cakra (Zodiac) into 27 parts. Rāśis are the signs of the Zodiac being 12 in number, each of them including $2\frac{1}{4}$ nakshatras

THE SUN, THE ZODIAC
&
THE SEASONS

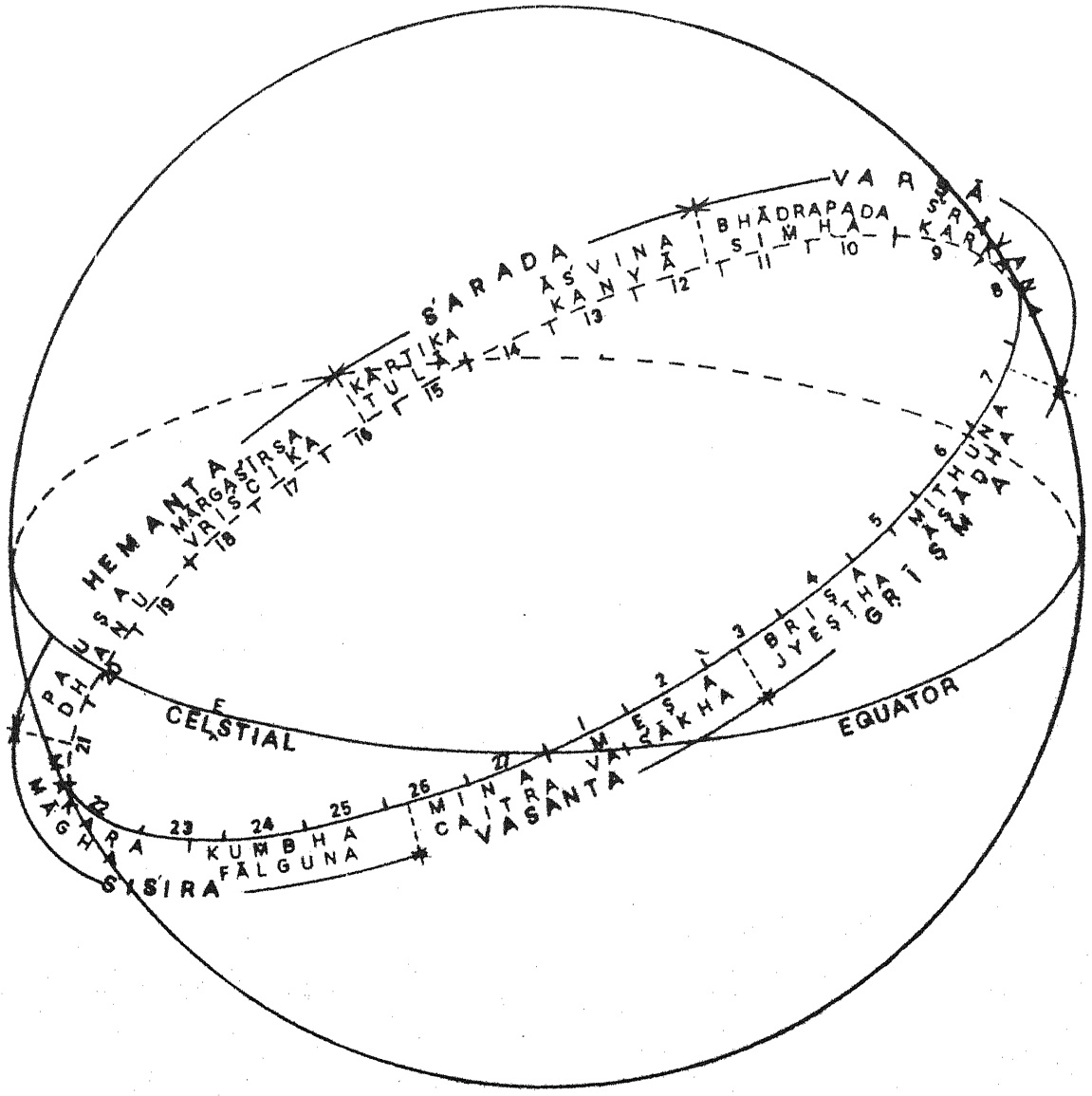

FIG.I.1

or nine padas (quarters)[21] and named according to general form. Rāśi and Nakshatras are very significant and have close relation with the motions of the planets, occurrences of climatic phenomena, seasons and months[22] (Fig. 1.1).

The Rāmāyaṇa mentions the term Nakshatra patha (the path of the constellations) and Nakshatra mālā[23] (belt of the constellations) signifying the astronomical observation in the epic age and on the basis of which astronomers had forecasted. Besides, the great epic also points out the name of the various constellations[24] their association with planets and their effect on mortal creatures[25] which proves that astronomical observations had fully crystallised and computation was improved tremendously.

(b) The Solar System

The term 'Solar System' is used for the sun and all that moves round it. It is the group of celestial bodies consisting of the sun, the planets which revolve round it, the planetoids or asteroids, comets, meteors and meteorites and the satellites which revolve round the planets. The word 'solar' insinuates that sun is the head of the family which dominates the members of the system.

(i) Knowledge of the Solar System

The Aryans' knowledge of the Solar system in the Rigvedic period was not much advanced. Thirty four heavenly bodies as mentioned in the Rigveda[26], include the sun, the moon, five

planets and twenty seven constellations. The knowledge of the seven planets is discernible in the later literature[27] such as the Baudhyāyana Dharma Sūtra mentions the Sūrya (Sun), Candra (Moon), Aṅgāraka (Mars), Budha (mercury), Vrihaspati (Jupiter), Śukra (Venus), Śani (Saturn), Rāhu (ascending node) and Ketu (descending node). It is important to note that the earth is nowhere described as a planet.

In the epic period, the knowledge of the solar system was much developed. The Rāmāyaṇa[28] refers to the sun, moon, mars, mercury, jupiter, venus, saturn, Rāhu and Ketu as the members of the solar system. The Rāmāyaṇa recognises the retrograde motions of the planets and their conjunction[29]. It may be noted here that the ascending and descending nodes of an eclipse, an important phenomena which attracted the people on the Parvas (i.e. Pūrṇamāsī and Amāvasyā) were named as Rāhu and Ketu respectively.

(ii) The Sun and the Planets

According to modern astronomical observations the sun is the centre of a family of spheres which form the solar system and ancient astronomers knew it well, but for their religious conceptions and astronomical calculations they considered the earth in centre.

The Rāmāyaṇa mentions various synonyms for the sun which are very significant and denote its important characteristics. These are -

Āditya, Apāṁmitra, Aṁśumāna, Agnigarbha, Aditi, Bhānu, Bhāskara, Bhuvaneśvara, Divākara, Dinakera, Gabhastimāna, Ghanavriṣṭi, Haridaśva, Hiraṇyagarbha, Khaga, Lokasākṣī, Mārtaṇḍa, Nakshatragrahatārādhipa, Pūṣā, Prabhāskara, Ritukartā, Ravi, Savitā, Sūrya, Sahastrārci, Tvaṣṭā, Tamobhedī, Tapana, Vivasvāna, Vyomanātha, Viśvabhāvana, Viśvakarmā, Vindhyavīthi, etc.

The Rāmāyaṇa clearly mentions that the sun moves alongwith all the planetary system on its orbit and is the controller of lunar mansions, planets and stars. The celestial bodies have originated from the sun. The sun is called Āditya as it holds the heavenly, earthly and nocturnal light and darkness and also signifies planetary radiance. Bhāskara means as shining and bright due to the radiative nature. The name Savitā is due to the tendency of the sun to send forth its rays. Khaga indicates the course of the sun in the heaven and Pūṣā means the nourisher of all. The sun is known as Sahastrarasmi (having thousand rays), Divākara (maker of the day), Haridaśva (having seven horses), Vishvakarmā[30] (the architect of the universe) etc. The seven horses represent the seven coloured rays of the sun i.e. Red, orange, yellow, green, blue, indigo and violet.

The sun rises in the east in the morning, ascends to its highest altitude in the noon and sets in the west in the evening. The Rāmāyaṇa[31] informs us that the sun traverses between two maximum limits i.e. Uttarāyaṇa (northerly) and Dakshināyaṇa (Southerly), therefore, the light, radiation and

APPARENT ANNUAL MOTION OF THE SUN

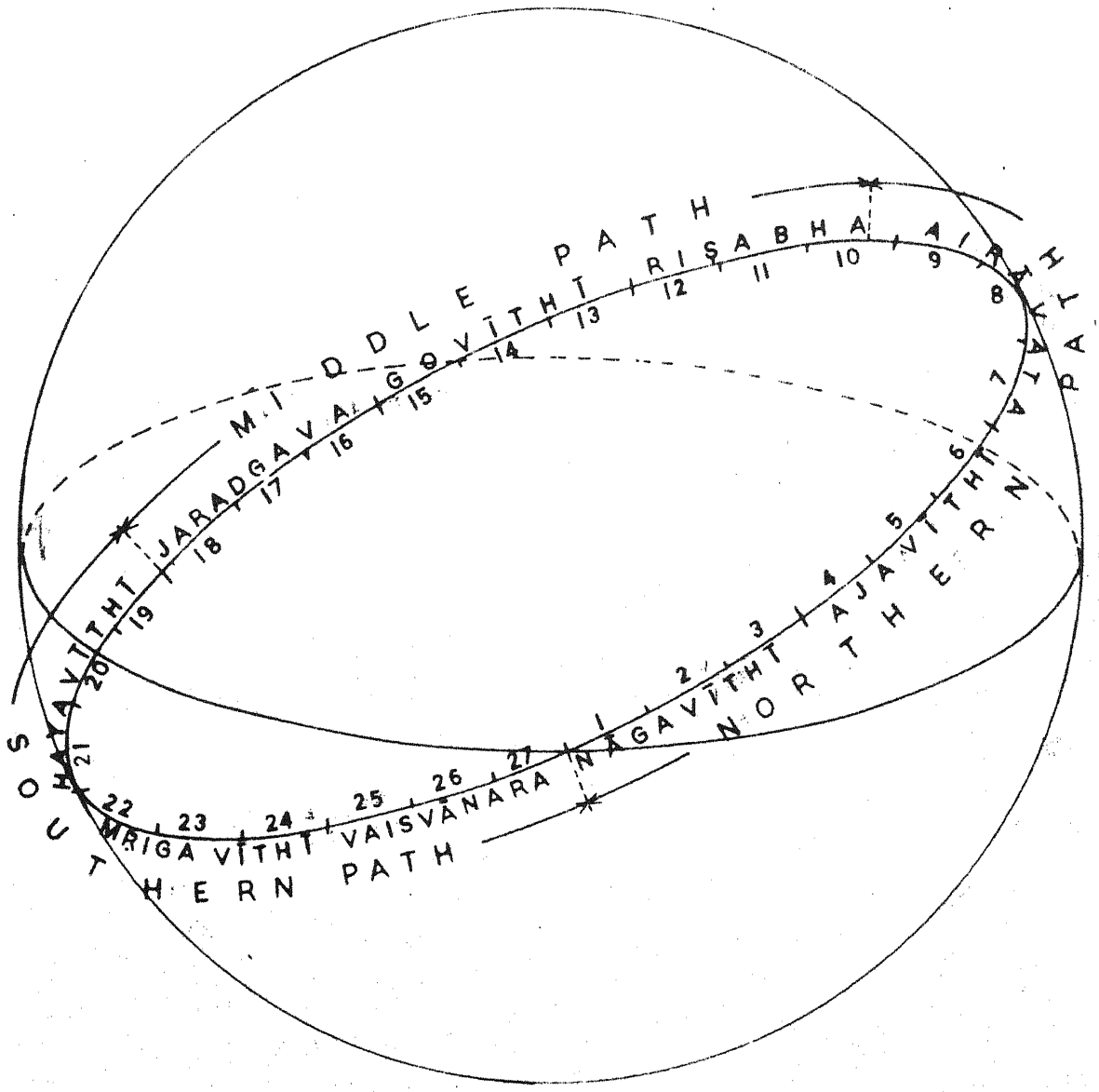

FIG.I.2

heat of the sun change according to its apparent seasonal motion (Fig. 1.2). The Rāmāyaṇa[32] enumerates twelve Ādityas for different months. These twelve Ādityas governing the sun in each month purport significant meanings belonging to the climatic conditions and other phenomena into the atmosphere affecting the surface of the earth.

In the Vedic literature, there is no mention of sun-spots but the Rāmāyaṇa[33] refers to short, dreary, inauspicious and coppery halo and a black spot in the sun. These sun spots foretell evils such as famine, disease and disaster which influence the destinies of human beings on the earth. The sun spots also affect the currents of the ocean and temperature.

In Rāmāyaṇic age, the enquiries about the sun and its motion were of much interest. The Rāmāyaṇa[34] mentions that Jatāyu and Saṁpāti wanted to know the atmospheric strata, the size and shape of the sun, the nature of its motion, relationship with earth, planets and other heavenly bodies and dimensions of the universe. On their enquiries they reached below the path of the sun and from where the earth covered with mountains looked as strewn with pebbles and rivers appeared entwined with threads. They fixing their mind and eyes with great effort, saw the path of the sun and its destructive heat. Due to intolerable heat, they speedily fell from the sky.

The astrophysical character of other planets has been described by the author of the Rāmāyaṇa such as follows:

Maṅgala (Mars) - Various synonyms are used for it such as - Bhauma, Aṅgāraka and Lohitāṅga. Its colour is described as red having brilliant rays and at the period of retrograde movement it is mentioned as having a stern aspect[35].

Budha (Mercury) - The war between Bāli and Sugrīva, Aṅgada and Bajradaṁstra, is said to be like the horrible opposition between the Budha and Aṅgāraka.[36] It is rendered to be green colour and assumed an austere appearance[37].

Vrihaspati (Jupiter) - Its colour is Pāṇdura (yellow) and it is clearly mentioned in the Rāmāyaṇa that when Jupiter in conjunction with the moon appears in the zodiacal sign of Karka, it is very auspicious[38].

Śukra (Venus) - It is most significant planet for its white colour and characteristics of auspiciousness. It is noted for its glory brightness[39].

Śani (Saturn) - It is mentioned as black in colour and noted for auspicious and inauspicious character[40].

The Moon.- The moon is one of the most interesting and attracting heavenly bodies for an observer. Sometimes it hangs in the sky like a golden crescent - a bow of light, at others it is half lit-up while, at full, it seems as a great round ball of light so brightly lighting up the sky that only the more glitterand stars remain visible to the bare eye. Various synonyms of the moon which are mentioned in the Rāmāyaṇa are -

Soma, Śaśi, Candra, Niśākarāḥ, Śaśāṅka, Śītāṅśuḥ, Sahastrarasmiḥ, Tārādhipati, Indu etc.

The Śatapatha Brāhmaṇa mentions the moon's origin from the Prajāpati Aṇḍā, the very source of the universe[41] which denotes the importance of the moon in the universe. A synonym of the moon is Abja, indicating its origin from the ocean on the earth. In the Rāmāyaṇa, the moon is said to have come out of the Kshīrasāgara (ocean of milk) at the time of its churning[42].

The importance of the moon was considerable, as the Aryans reckoned time with the help of its movement particularly by its waxing and waning times for scrificial activities. The full and new moon days were excessively important in this respect. Regular movement of the moon with constellations is mentioned in the Rāmāyaṇa[43], but no where it is supposed to move around the earth.

(iii) Phases of the Moon (Candra Kalā)

Illumination of the moon and its progressive changes in appearance or phases were well known to the Rāmāyaṇic people and they revealed the secret of its phases. It may be noted here that due to its different positions in relation to the sun, its portions are partialy visible and partialy invisible. Some times, it is thin crescent shaped, sometimes half lit and sometimes full. It is totally invisible on Amāvasyā, once in a month, and this change in the shape of the moon is technically

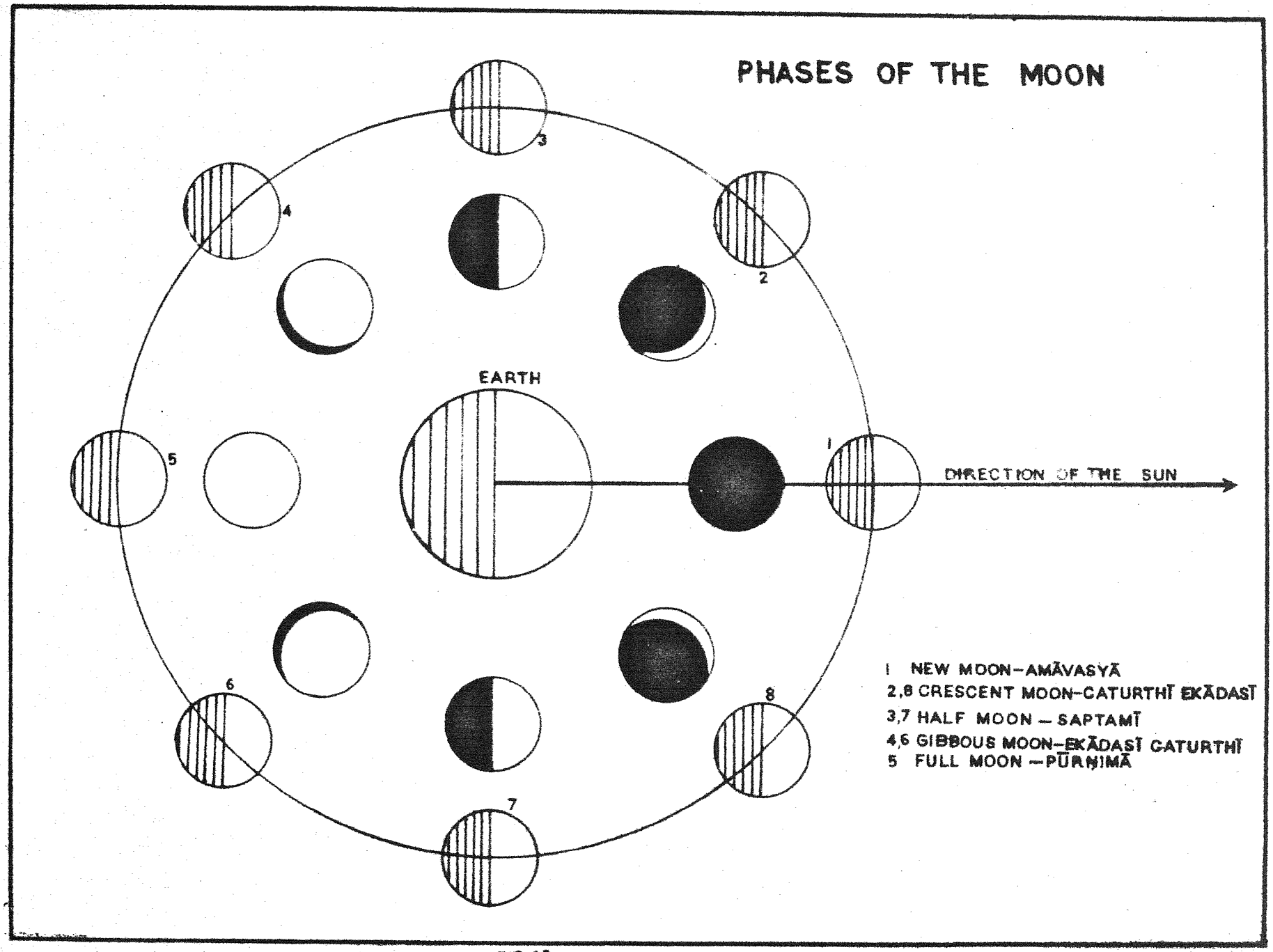
PHASES OF THE MOON
EARTH
DIRECTION OF THE SUN
1 NEW MOON–AMĀVASYĀ
2,8 CRESCENT MOON–CATURTHĪ EKĀDASĪ
3,7 HALF MOON – SAPTAMĪ
4,6 GIBBOUS MOON–EKĀDASĪ CATURTHĪ
5 FULL MOON – PŪRṆIMĀ

FIG. 1.3

termed as Candra kalā (phase of the moon). These different phases of the moon depend upon relative positions of the sun, earth and moon. The Rāmāyaṇa clearly mentions the different phases of the moon, i.e. New Moon (Amāvasyā[44]), crescent moon[45], half moon[46] and full moon (Pūrṇamāsī or Pūrnimā[47]) (Fig. 1.3). Thus, it is clear that ancient astronomers were acquainted with both rotation and revolution of the planets and satellites.

(iv) Eclipses (Grahaṇa)

Eclipses are very significant natural phenomena and were marked by the Vedic people. Hindus from the very early days have been performing some ritual duties at the time of the eclipses. Broadly speaking, eclipses are of two kinds i.e. Lunar and Solar.

Lunar Eclipse

When the earth coming in between the sun and moon, casts its shadow on the latter, the natural phenomena so occurring is known as the lunar eclipse and in the Rāmāyaṇa it is termed as Rāhu[48] which meant the ascending node of the moon. It occurs only at the time of full moon when the moon is in opposition[49] (Fig. 1.4). It may be pointed out here that it does not occur at every full moon. The ancient astronomers had developed the devices to know the fixed date of an eclipse, therefore, the lunar eclipse occurs in the following conditions[50]:

(a) The moon must be opposition, i.e. full on Pūrṇimā tithi, and

(b) It must be at or near one of its nodes.

When the moon is consummately obscured, is known as total eclipse (Khagrāsa or Sarvagrahaṇa) and when it is partially observed it is termed as a partial eclipse (Khaṇḍa grahaṇa). The Rāmāyaṇa[51] also refers to the clearance of (Moksha) the eclipse.

Solar Eclipse

This natural phenomena is an obscuration of the light of the sun, when the moon passing between the earth and the sun, projects its shadow on the former. The Rigveda refers to the solar eclipse[52] and it was considered throughout the Vedic and epic period that a demon called Svarbhānu, later known as Rāhu attacks the sun with darkness in which the latter disappears. The Rāmāyaṇa[53] refers to Rāhu and Ketu as the very cause of the solar eclipse, which are mentioned as scourge of the sun and moon.

An interesting and fully satisfactory proof of a total solar eclipse is mentioned in the Rāmāyaṇa. At the time of the eclipse, sun became lustreless and the stars appeared in the sky when there was no night[54]. Moreover, the Rāmāyaṇa mentions that the glorious sun itself felt wretched with its splendour totally eclipsed and its orb rendered pale[55]. The word Svarbhānu[56] in the sense of Rāhu has been used in the epic which technically means 'a body which disturbs by virtue of its shadow (position)'. Thus, the solar eclipse occurs only at the

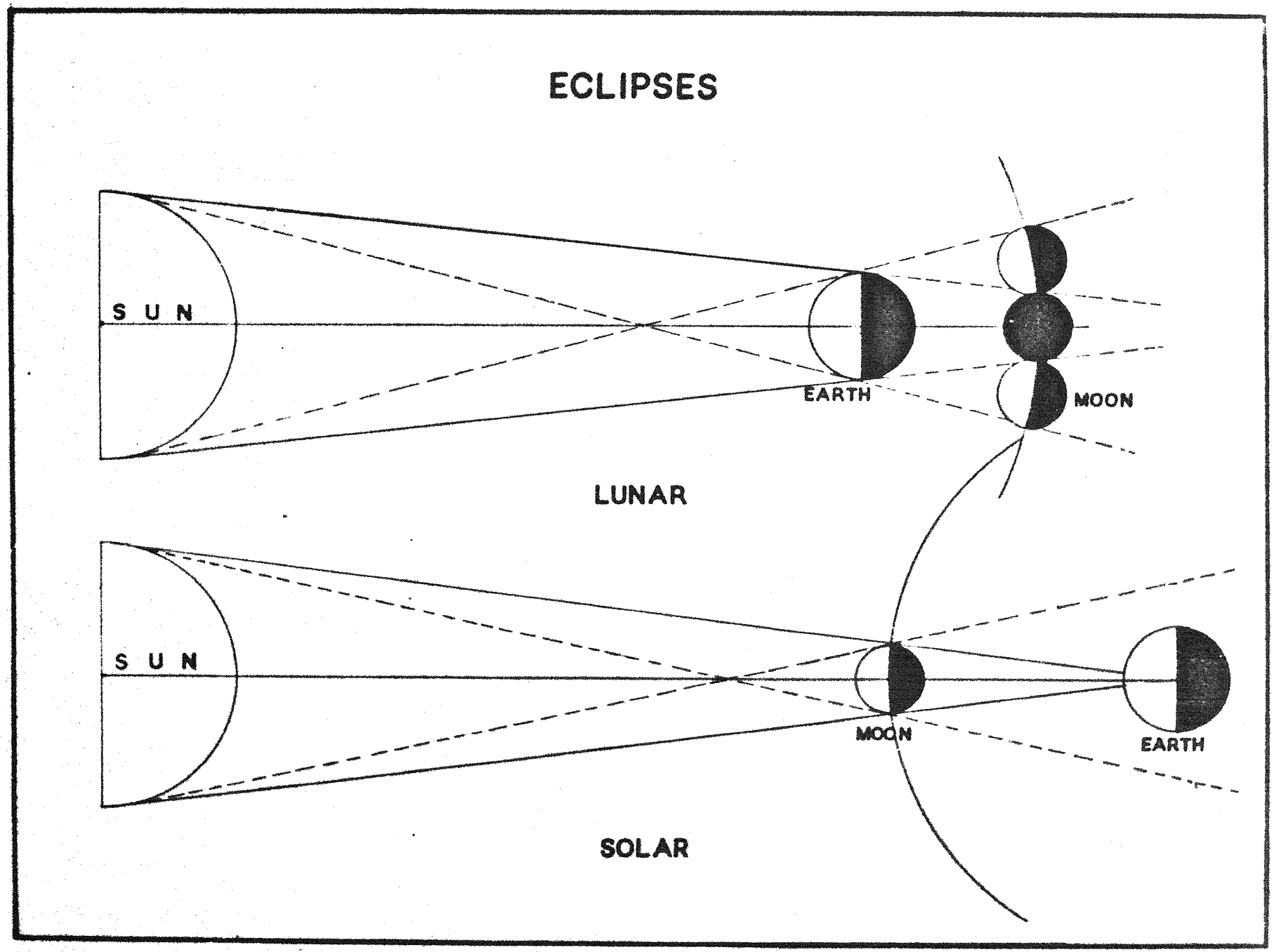

FIG. 1.4

new moon when there is conjunction of the moon and the sun[57], but it does not occur at every new moon (Fig. 1.4). It is notable here that the occurrences of the eclipses are cyclic and they have been regarded as the herald of the disaster and inauspicious famine and loss by the ancient astronomers.

(v) Meteors and Comets (Ulkā and Dhūmaketu)

Ulkā (meteors or shooting stars) can be easily seen on any clear night in the sky and it means the shining body. There are frequent references for the meteors fell from the sky, in the Rāmāyaṇa and point them as a part of fire[58]. In the Rāmāyaṇic age, the shooting stars, falling down were considered to be an ill-omen[59]. The Ulkās have been recorded as heavenly disturbances[60] and the Rāmāyaṇa categorises them with the earth-quake, nirghāta (meteorites) and grahaṇa (eclipse[61]). The Rāmāyaṇa also mentions Maholkā (colossal meteor) and one hundred meteors crumbling in the air[62].

Dhūmaketu consisting of a solid nucleus and a lustrous gaseous tail, is a celestial body, revolving round the sun in an eccentric orbit. In the Rāmāyaṇic age, Dhūmaketus (comets) were considered as the herals of some disaster with presages of catastrophe-war, earthquakes, epidemic etc.[63]

(c) The Concept of the Earth and the Facts Related to it

The Rāmāyaṇa is regarded as an ideal representative of Kāvya (artificial epic), therefore, it is hardly possible to come across any exclusion devoted therein to the description

of the earth and its related facts. Only incidently, by way of illustrations, geographical phenomena and matters are embodied in the Rāmāyaṇa. These geographical references have been systematically arranged and explained so that we may be able to note that how much the ancient Aryans knew about the earth and certain related facts. According to the Rāmāyaṇa the earth having the forest and mountain ranges[64] is supported by Nāgas[65] and is encircled by the oceans[66]. Besides, Rāma or the Supreme Being is said to be the support of the earth. It would not be unreasonable if this is taken to imply to a certain extent the gravitational force as the sole support of the earth[67].

(i) Shape, Size and Movement of the Earth

The term Bhūgola in the Sanskrit literature signifies the spherical shape of the earth. In the Vedic literature, there are fragment references about the spherical shape of the earth[68] from which we can infer that in the early days, the Aryans were well acquainted with the sphericity of various heavenly bodies.

In the Rāmāyaṇa, we find that the ancient Aryans possessed the knowledge of the rotundity of the earth. The Rāmāyaṇa mentions that the routine execution of day and night is controlled by the sun[69] and it is mentioned in spherical shape[70]. Thus, it may be inferred that the earth is spherical.

Besides, the Aryans' conception about the shape of the earth may be visualised from the following facts:

(a) the sacrificial ground (i.e. Vedī) was located at any place was supposed to be, as the beginning, the end and the centre of the earth's surface[71]. This is true only in the case of a sphere, as every point on the sphere may be its centre and indicates more or less the ellipsoidal shape of the earth.

(b) The Sun is mentioned as Ritukartā (maker of the seasons) in the Rāmāyaṇa[72] which indicates about the equinoxes and various motions of the sun. This process happens only due to the spherical shape of the earth.

(c) The term Lokasākṣī for the sun (on looker of the world) designates that the sun neither sets nor rises and it is mentioned in the Rāmāyaṇa that he always remains awake[73]. These assertions can be explained only when the earth in its spherical shape revolves round the sun.

Thus, the above mentioned notions give an idea of the spherical shape of the earth as known to the Rāmāyaṇic people.

There is no definite information regarding the earth's dimension in the Rāmāyaṇa but from the various references relating the circumambulation round the globe by various Rāmāyaṇic people[74], show that during that age, people were very curious to find the earth's dimension. Though, the travellings of the Rāmāyaṇic people contain a lot of mythical, legendary or imaginary material, still in them we come across considerable scientific geographic informations regarding to various dvīpas or countries and oceans which is quite accurate.

The Rāmāyaṇa also indirectly informs about the rotation and revolution of the earth. There is a definite reference in the epic which tells about the increase and decrease of day and night[75] is caused by the northern and southern shifting of the sun[76] and on the basis of the evidence it can be asserted perhaps with greater positivism that the Rāmāyaṇic people knew about the movement of the earth.

(ii) Time, Computation of Time and Its Divisions and Age of the Earth

In the Vedic age, the people performed all periodical performances with great punctuality because they fully realised the value of time. In Sanskrit the term Kāla denotes the time. It appears from the study that in the Vedic age the word Kāla was used in two senses i.e. Time in general as in modern Indian languages and secondly as identical with the Supreme Being or the source of creation. The latter sense is emphasised in the Rāmāyaṇa[77] where it is said as 'Sarva samāhāraḥ' (destroyer of the all).

Basically the Rāmāyaṇa is not a astronomical composition, therefore, it does not give the clear-cut idea of computation of time and its divisions. But it is apparent that the division of time is effected by the apparent motion of the sun and the Rāmāyaṇic people possessed the knowledge of minor and major divisions of time. The smallest units of the time are expressly mentioned in the Rāmāyaṇa[78] and their tabulated form is as follows:

15 Nimeṣa (Winks)	=	1 Kāstha (3.2 seconds)
30 Kastha	=	1 Kalā (1 minute 36 seconds)
30 Kalā	=	1 Muhūrta (48 minutes)
30 Muhūrta	=	1 Ahorātra (24 hours)

Periods greater than day and night are fortnight, month, season and year.

Ahorātra (day and night)

The apparent diurnal motion of the sun has a great significance for mankind and ahorātra is the daily phenomena caused by the sun. An ahorātra has been divided into two parts Diva (day time) and Rātri (night), each of 15 muhūrtas in duration on Viṣuva day when the sun shines on the equator. According to the Rāmāyaṇa a sacrificial day was divided into three parts namely Prātaḥ (morning), Madhyāhna (noon) and Sāyam (evening) and these three times were synchronised with three daily rites[79]. Besides, for the specific purposes, the number of divisions of a day increased to five consisting of six Ghatikās (2 hours 24 minutes) each which may be called the stages of a day. They were known by the names of Prātaḥ (morning), Saṅgava (forenoon), Madhyāhna (mid day), Aparāhna (afternoon) and Sāyāhna (evening)[80]. Account of the day starts from the sun rise and finishes with the evening. In the Rāmāyaṇa[81], there is mention of a particular day, but its name has not been given, therefore, it appears that the Rāmāyaṇic people had arranged the occurrences of different days as in modern astronomy.

Fortnight or Paksha, Month or Māsa and Year or Varsa

Paksha[82] means ardhamāsa and a month consists of two pakshas. The first fortnight of the month is called pūrva-paksha (former fortnight) and the second 'apara-paksha' (later fortnight). Two pakshas make a candramāsa (lunar month) of about 29½ days and, therefore, a candravarsa (lunar year) has been calculated to be of 354 days which is 11 days less than Sauravarsa (solar year). In this connection, it is remarkable that Rāma returned from his exile according to lunar years' calculation[83].

A year consisted of usually twelve months[84] is mentioned in the Rāmāyana and the Vedic conception of the months in a year was followed by Indians in the Rāmāyanic age. The Rāmāyana also refers to Adhimāsa (intercalary month) and Kshayamāsa (loss of a month)[85]. This means that the Rāmāyanic people were fully aware of adjusting the lunar year with the solar year.

The Rāmāyana[86] also informs about some Vedic months which were not popular in use in the time of the Rāmāyana. The denomination of the months seems to base upon the names of some nakshatras, as the sequence of the names of months accords well with the order of the nakshatras. The ancients also correlated the months with the Rāśis.

The following table shows the names of Hindu months with corresponding English months alongwith nakshatras and Rāśis:

S. No.	Month	Name of the Corresponding Nakshatra	Rāśi	English Equivalent
1.	Caitra	Citrā	Mīna	March
2.	Vaiśākha	Viśākhā	Meṣa	April
3.	Jyeṣṭha	Jyeṣṭhā	Briṣa	May
4.	Āṣāḍha	Āṣāḍhas	Mithuna	June
5.	Śrāvaṇa	Śravaṇa	Karka	July
6.	Bhādrapada or Proṣṭhapada	Bhādrapadas	Siṁha	August
7.	Āśvina	Aśvinī	Kanyā	September
8.	Kārtika	Krittikā	Tulā	October
9.	Mārgaśīrṣa	Mrigaśirā	Vriścika	November
10.	Pauṣa	Puṣya	Dhanu	December
11.	Māgha	Maghā	Makara	January
12.	Phālguna	Phālgunīs	Kuṁbha	February

The Rāmāyaṇa does not refer to all the names of the months of the above table except Caitra, Śrāvaṇa, Bhādrapada and Kārtika[87]. This indicates that the idea of the deriving the names of various months from the nakshatras was well known in the Rāmāyaṇic age.

Ritu (Season)

The Rāmāyaṇic people were familiar with the chief characteristics of Indian climate and seasonal changes. Their social and religious rites were markedly related to the seasons. The Rāmāyaṇa deals with six seasons in a year and points out the

seasonal variation in relation to Uttarāyaṇa and Dakshiṇāyaṇa position of the sun. The correlation of the months and the seasons is as follows:

Ritus	Months	English Equivalents
1. Vasanta	Caitra-Vaiśākha	March-April
2. Grīṣma	Jyeṣṭha-Āṣāḍha	May-June
3. Varṣā	Śrāvaṇa-Bhādrapada	July-August
4. Śarada	Āśvina-Kārtika	September-October
5. Hemanta	Mārgaśīrṣa-Pauṣa	November-December
6. Śiśira	Māgha-Phālguna	January-February

This view has been well illustrated in Fig. 1.1. A vivid description of the seasons with their chief climatic characteristics will be given in Chapter II.

The major divisions of time e.g. Kalpa, Manvantara and Caturyugas etc. represent the geological eras of the ancient Indian Scholars and various incarnations of the God signify the evolution of the various creatures on the surface of the earth[88]. The Rāmāyaṇa also refers to the Satya, Tretā, Dvāpara and Kali as the caturyugas[89] but their duration is not mentioned. It is clear that they come in cyclic order and are replaced more and more quickly. The duration of each yuga is mentioned in the Purāṇas and astronomical Saṁhitās.

As regards the age of the earth, there is no any information regarding it in the Rāmāyaṇa. But it is true that from the beginning, the ancient astronomers have tried to calculate

the period, when the earth originated and in their findings there is not even a little bit of diversity. According to the Purāṇas and astronomical Saṁhitās the age of the earth is about 2000 Million years[90] which corresponds with the modern scientific calculations[91].

(iii) Directions (Dik)

It is believed that in the Vedic age, the Aryans passed through early stages of life and their notions about natural phenomena were not accurate and scientific but from the study of the Vedic literature it is clear that the fundamental ideas of geography were well marked by them. They took keen interest in observing the most beautiful and powerful phenomena affecting their life and they also applied their power of reasoning in elaborating their causes and effect. On various natural powers, they particularly observed the various processes of the sun - the quarters of its rise and setting, its apparent motion and warmth. Undoubtedly, the Aryans had great veneration for the sun, whom they considered as the nucleus of the universe. The Rig Vedic Aryans firstly formulated the idea of four directions. The eastern quarter being the first due to sun rise, was named 'prācī', later known as Pūrva (east). Just opposite to the eastern quarter was named as 'pratīcī', later known as paścima. The other two directions i.e. south and north must have naturally been denominated on the basis of sacrificer's hands position on the right and left side respectively[92]. By adding zenith and 'nadir' it was raised to six and the earth was called Satūrvī.

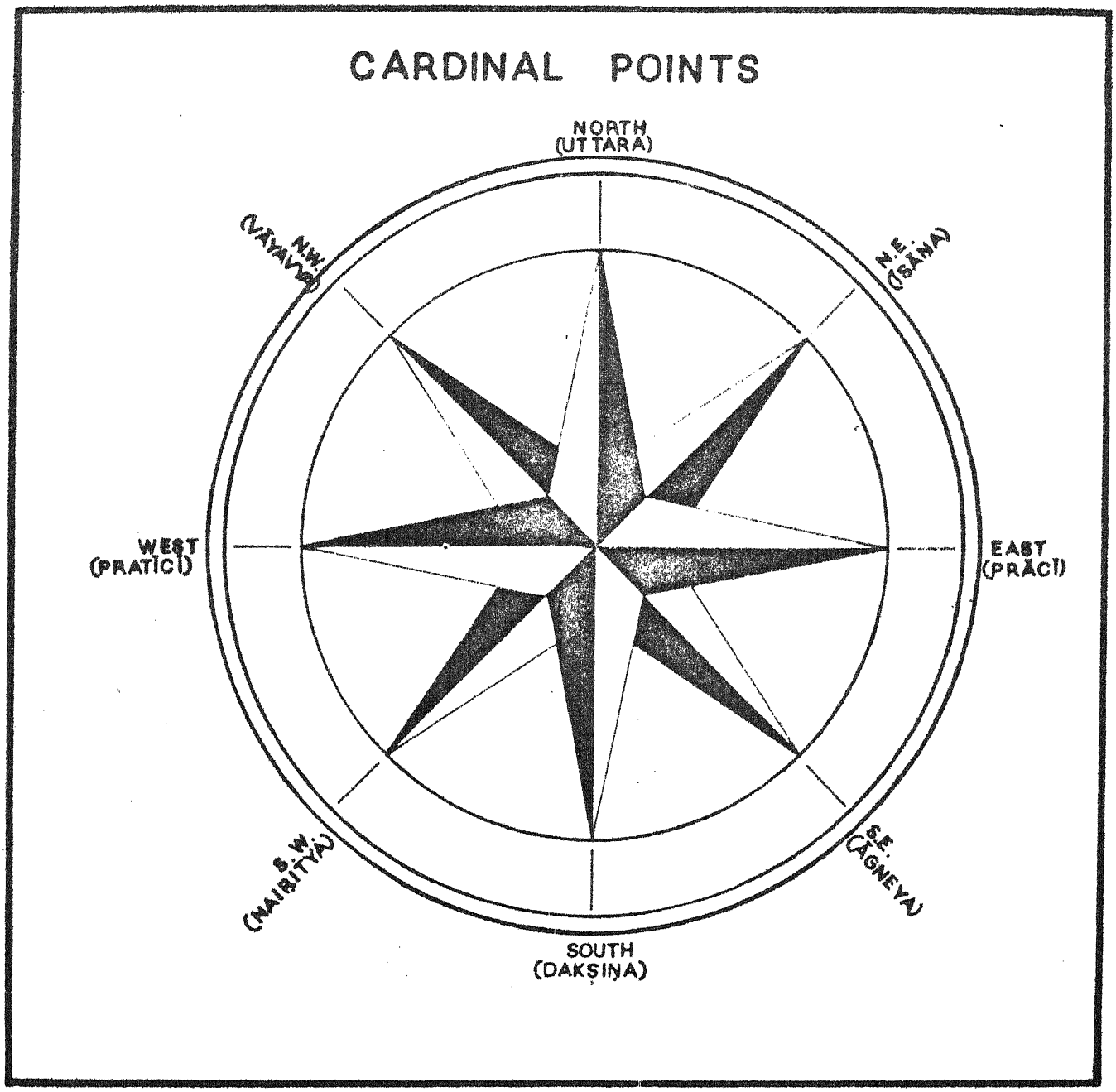
CARDINAL POINTS
NORTH
(UTTARA)
N.E.
(ĪŚĀNA)
EAST
(PRĀCI)
S.E.
(ĀGNEYA)
SOUTH
(DAKṢIṆA)
S.W.
(NAIRṚTYA)
WEST
(PRATĪCĪ)
N.W.
(VĀYAVYA)

FIG. I.5

Afterwards eight and ten directions are frequently mentioned in the Vedic literature[93]. The four primary directions and the four intermediate ones formed eight (Fig. 1.5).

The Rāmāyaṇa reveals the knowledge of the directions and relates them with various gods dominating in each of them[94]. Mahāgajas[95] probably signify bearing on any place with respect to north, which goes on increasing measured clockwise from north to north through east, south and west. Thus, it is evident that at the time of the Rāmāyaṇa the knowledge of four quarters and their intermediate corners along with 'nadir' and zenith was of great importance for specific purposes[96]. It is clear, that first of all the Aryans determined the east from the sun rise[97] and likewise about west from sunset, thus devised certain methods. They also knew the true north by the Pole star.

The association of the gods for various quarters is of great importance. The eastern quarter was associated with the natural phenomena like sun rise - a form of fire and coming of the rain bearing winds and rainfall. These phenomena led to the conception that the eastern quarter is ruled by the gods' of rain i.e. Indra. Indra is the bestower of urgent requirement i.e. rain which was available to the Aryans from the eastern direction. Likewise the western quarter was associated with Varuṇa, the god of water, indicates the spaciousness of the oceans in the western quarter. Kubera the god of wealth and Yama the god of death were associated with northern and southern quarters respectively. For these gods the sun's position in

the two hemispheres in two different seasons is remarkable. In the Uttarāyaṇa course, days were longer with increased temperatures which encouraged and gave sufficient time for Aryans' ritual activities and the conditions were reversed during the Dakshiṇāyaṇa course, therefore, it was believed that the spirits of the deceased dwell in the southern direction[98].

Thus, it is evident that in the sacrificial performances, great importance was given to the direction and the sense of direction also influenced to architectural plan also.

It becomes obvious that the Rāmāyaṇic people had possessed a thorough knowledge of the cosmogony, the solar system and related facts, a thorough knowledge of the earth, its shape and motions. They had calculated the time on their scientific observation and determined the directions. The entire summary supports the development of the scientific studies in the Rāmāyaṇic age.

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9. Rām. VI. 105.6 ff.; VII.56.7-8; VII. 63.20.
10. Rām. II.1.43; II. 25.13.
11. Rām. I.47.3.
12. Rām. I.1.66; I.40.12,16; I.43.6,40; I.45.27; III.69.11; III.72.27; VII.23.4,16; VII.69.34-35; VII.97.20,24; VII.98.5.
13. Rām. I.32.14; I.34.16; II.10.8; II.14.19; II.119.9.
14. Rām. III.23.13.
15. Rām. I.14.27.

16. Rām. II.25.11 and I.60.21 respectively.

17. "अर्चिष्मन्तः प्रकाशते ध्रुवं सर्वे प्रदक्षिणम् । Rām. VI.4.48.

18. Rām. I.35.22.

19. Rām. VI.4.3.

20. Dube, B. (1967), op.cit. p.9.

21. Idem.

22. Rām. I.18.8-9.

23. Rām. III.31.35; III.43.22 and III.52.28 respectively.

24. The Constellations which are mentioned in the Rāmāyaṇa are: Krittikā - I.37.23,28; Rohiṇī - V.15.22; V.19.9; V.23.7; V.37,26-27; V.55.20; VI.92.45,61; VI.111.20; VI.113.3; VII.9.26. Mrigaśirā - III.43.37; Punarvasu - I.18.9; I.29.25; II.4.21; V.57.3; VI.71.24; Puṣya - I.18.15; II.2.12; II.3.41; II.4.2,21-22,33; II.7.11; II.8.9; II.14. 25,42; II.26.9; III.16.12; V.57.2; VI.126.54. Śleṣā - I.18.15; Maghā - I.71.24; Pūrvā Phālgunī - I.72.13; Uttarā Phālgunī - I.72.13; VI.4.5; VII.5.34; Hasta - VI.4.5; Citrā - II.16.10; III.17.4; III.46.10; Svātī - V.57.3; VI.22.75; Viśākhā - VI.4.50; VI.76.15; VI.102-36; Mūla - VI.4.51; Śravaṇa - V.57.2; VII.70.8; Pūrva Bhādrapada and Uttara Bhādrapada - I.18.16.

25. Rām. I.6.27; I.29.25; II.2.12; III.17.4; III.46.10; V.57.3; VI.4.49-52; VI.24.7; VI.71.24; VI.76.15; VI.92.61; VI.102. 36; VI.128.36.

26. Saxena, D.P. (1960); op.cit. p.25.

27. Ibid - p.26.

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28. Rām. I.18.9; II.25.23; II.41.11; II.64.72; II.99.41; III.25.5; III.46.6,10; IV.12.17; IV.16.25; IV.54.4; V.27.16; VI.4.48-49; VI.54.28; VI.76.92; VI.102.33,36.
29. Rām. II.41.11 and II.49.41; III.23.24; III.46.10; III.49.16; VI.24.7; VI.102.36 respectively.
30. Rām. VI.105.6-22.
31. Rām. II.16.8-9; II.63.15.
32. Rām. VII.27.4,22; VII.28.27.
33. Rām. VI.23.9.
34. Rām. IV.61.3 ff.
35. Rām. II.41.11; III.25.5; IV.12.17; VI.54.28; VI.76.92; VI.102.36.
36. Rām. IV.12.17 and VI.54.28 respectively.
37. Rām. II.41.11.
38. Rām. I.18.9; II.99.41.
39. Rām. I.18.9; II.64.72; IV.54.4.
40. Rām. I.18.9; III.46.10.
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44. Rām. II.53.29; VII.35.35; VII.69.18.
45. Rām. III.38.15; VI.106.8; VII.66.4.
46. Rām. III.26.8; VI.56.18; VI.59.101, 140; VI.67.161; VI.69.62; VI.71.67.

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54. Rām. III.23.12-13.

55. Rām. I.55.9; II.63.2; III.52.38; III.66.11; VII.35.31-35.

56. Rām. III.23.12; VI.102.3.

57. Rām. III.23.12; VII.35.35.

58. Rām. II.4.17; III.23.15; III.52.31; VI.65.51; VI.100.21.

59. Rām. VI.57.35; VI.65.48; VI.106.24.

60. Rām. VI.57.35; VI.70.39; VI.77.12; VI.95.47; VI.100.21.

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Rām. II.16.24.

95. Rām. I.40.13, 18, 20, 22.

96. Rām. I.76.23; II.95.11; II.105.29; III.23.8; III.28.6; III.38.28; III.72.6; V.35.53; V.46.22; V.57.16; VI.40.4; VI.55.19; VI.75.33; VII.29.46; and for intermediate points - vide II.99.24; III.64.22; III.69.1.

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CHAPTER - II

PHYSIOGRAPHY

PHYSIOGRAPHY

Like other sciences, the study of 'Physiography' also developed in ancient India. The term 'Physiography' which is closely associated with earth's natural resources, has been applied to the three major physical divisions of the globe, i.e. the Lithosphere, the Atmosphere and the Hydrosphere. Physical changes though often silent and imperceptible, have been going on in our globe. After a compendious study of the Rāmāyaṇa, an attempt has been made in the present chapter to delineate the origin of the continents and ocean beds, endogenetic and exogenetic forces and their resultant topography. The chief characteristics of the major relief features have also been taken into account. Besides, to the geographer, the distribution of physical properties of the atmosphere and oceans, is a matter of special interest, therefore, we turn to examine the conditions of atmosphere and hydrosphere with particular reference to temperature, seasons, winds, clouds, rainfall, sub-marine mountains, oceanic fauna, waves and tides which have vital importance to mankind.

(a) Lithosphere

(i) Origin of the Continents and Ocean Beds

The broad features of the earth i.e. continent and ocean are termed as 'Relief features of the first order' by R.D.Salisbury. These features formed by internal forces, are very important from the geological point of view. The omnipresence

of changes in nature have created the problem concerning the origin of the continents and Oceans since past and it is very difficult to explain the authentication of any single idea. In the Rāmāyaṇa[1], the earth is regarded as lying hidden in the heart of vast ocean and this confirms the idea of the continental masses which are surrounded on all sides by vast water bodies[2]. The Rāmāyaṇa indirectly mentions the origin of the continents and ocean beds which is all mythical and there is nothing scientific in it. It indicates only to the investigation and speculation about a very important geographic phenomenon and is nothing more than that. The excavation of the earth in the Rāmāyaṇa refers to geology and interior of the earth in general[3].

(ii) Rocks and Major Relief Features

By the time of the Rāmāyaṇa, the Indians had come to acquire sufficient knowledge of rocks and their formation. The Rāmāyaṇa[4] refers to various types of rocks of different colours such as green, blue, red, white, yellow, black and coral rocks and minerals. In the epic, we find a description of the genesis of minerals, igneous and water activity and allied geographic process. "Thereupon that partaker of oblations offered unto gods, said unto Gaṅgā, 'Do thou bring forth thy embryo on the side of the Himavata'. Hearing Agni's words, Gaṅgā of mighty energy cast her exceedingly effulgent embryo on her streams, on sinless one. And as it came out of her, it wore the splendour of the molten gold and in consequence of its fiery virtue, objects near and objects far were converted into gold and silver of

unsurpassed sheen, while those that were most distant were turned into copper and iron. And her excreta were turned into tin and lead. In this wise, various metals began to increase on earth. And as soon as the embryo was brought forth, the woods adjoining the mountain being overspread with that energy were turned into gold"[5]. The above description is most fabulous and contains least scientific truth that minerals are generally found in igneous rocks and occur in a mixed state. Besides, it also indicates the knowledge of contact metamorphism.

Mountains (Parvatas)

In the Rāmāyaṇa mountains are regarded as upholding the earth[6], therefore, they are termed as Dharaṇīdhara or Mahīdhara or Dharādhara. The epic reveals very accurate knowledge of genesis, types and geomorphological features of the mountains.

Mountain Building

The Rāmāyaṇa indirectly refers to some sort of gaseous activity regarding the mountain building or orogenetic processes[7]. The mountains are said as risen having split the earth[8]. The mountains are called the maintainer of the balance of the earth (Bhūdhara, Dharaṇīdhara or Mahīdhara[9]) and roots as well[10] in the epic, therefore, we can search for some acquaintance with the theory of Isostasy without any mythological colouring. The mountains were considered unstable due to tectonic movement since the past[11]. Besides, the phenomena of tectonic movement and submergence[12] of rising of a mountain in an ocean deep[13], of horizontal and vertical movement of a mountain or earth's

crust[14], of submergence due to earthquake (literally wind) amidst the ocean[15], of submergence of a very high mountain and genesis of level plain[16] are also referred to the Rāmāyaṇa. Thus, it seems to justify a wave like mobility of the crust when it is under stress involving great horizontal and vertical movements.

It is said that in the beginning, mountains had wings and could fly like birds. The sight of the floating mountains inspired great awe in the heart of the people and so Indra chopped off their wings by his thunderbolt[17]. This mythology of the Rāmāyaṇa confirms the concept of the continental drift and orogenetic processes. The Rāmāyaṇa clearly refers to erosive action of the down pour of rain[18] and block disintegration due to temperature change, rock slides on the mountains and finally formation of the peneplain[19]. In the Rāmāyaṇa, the Vindhya mountain is said as high as the Himālaya overlooking each other[20]. The Vindhya is said to have become angry with the Sun and checked his motion. Agastya asked the Vindhya to let him pass over and not grow till he did not return - and the Vindhya still awaits the return of the sage[21]. The legend indicates the vertical movement of the Vindhya mountain up to a certain height and due to denudation process it became smaller.

Types of Mountains

In the Rāmāyaṇa[22], the terms Parvata and Giri are used to denote mountain and hill. Various synonymous terms which are used such as Bhūdhara, Bhūmidhara, Dharādhara, Mahīdhara, Dharaṇīdhara, Naga, Śailendra, Acala, Śaila, Mahācala, Mahāgiri,

Śilocceya, Giri, Parvata Śikharin etc. reckon the generic types of the mountains and bear great significance. Geographically speaking, the word Parvata means a mountain range which is either a single large, complex ridge or a series of clearly related ridges that make a fairly continuous and compact unit[23]. In Sanskrit rocks are termed Śilā, hence a mountain is termed as Śaila (composed of rocks) or Śiloccaya (accumulation of rocks)[24].

The various geomorphological features in a mountainous region are well marked by the ancients and to signify them, they have used certain technical terms such as, Antarā (underground), Darī (hollows), Droṇī (mountain valley), Gahvara (cirque), Giridvāra (mountain-pass), Giripāda (foot of mountain), Giriśriṅga (horn of mountain), Girinirdara (mountain cave), Giriṭaṭa (edge of mountain), Giridurga (mountain gorges), Guhā (cave), Kandarā (cavern), Kūṭa (peak), Parvataśriṅga or Giriśriṅga (mountain peak), Priṣṭha (background), Prastha (saddle), Pārśva (adjoining region), Sānu (crest), and Śikhara (peak)[25].

Effect of Mountain Relief

The two main influences of the mountain relief i.e. protective and restrictive have been referred to the Rāmāyaṇa. The mountains afford protections against invaders, therefore, the kings built giridurgas (mountain forts) as is given in the sequel (Chapter VI).

In the Rāmāyaṇa, the mountains are said to be full of natural beauty, wealth and minerals[26]. They were considered holy and a sight on the mountains is believed to inspire pious

thoughts in one's mind and to ensure one's welfare[27]. They were the centre of Risis who established their hermitage and meditated over them[28]. Besides, the Rāmāyanic people also celebrated their picnics on the mountains or hills[29], hence it may be said that mountaineering was also in practice during the Rāmāyanic age. Thus, it becomes obvious from the study of the Rāmāyana that the Rāmāyanic people had a vivid knowledge about the mountainous relief and its effects.

Plateaus

Plateaus are highlands with extensive, flattish and rugged surfaces or summits. In the Rāmāyana, the terms Śailprastha, Visama and Sthala[30] are used to denote a plateau and there is no detailed description in the epic.

Plains

Plains are the relatively lowlands of the earth. They range in size from very small to very large areas. The sanskrit terms used in the Rāmāyana to denote a plain are Samabhūmitala or Samabhūmih and Sthalī[31]. The Rāmāyana clearly reveals the plains of northern and peninsular India composed of fine alluvial sediments which were agriculturally very rich and significant[32]. Besides, coastal plains are also referred to the epic[33].

There is a reference to Maru (desert) in the Rāmāyana, named as Marukāntāra (roughly extending in Marwar and Bikaner of Rajasthan) where small wells were the only sources of water supply which helped in wet farming[34]. Other geomorphological

features such as sandy banks of the rivers, swamps or marsh and ox-bow lake are also mentioned in the Rāmāyaṇa[35].

(iii) Endogenetic and Exogenetic Forces (i.e. Volcanoes, Earthquakes, Work of the rivers, glaciers and sea)

By the time of the Rāmāyaṇa, Indians knew well the Volcanoes, their eruption, activities and allied phenomena and the earthquake. But so far as the causation is concerned there is only mythical interpretation in the epic, yet, it contains a grain of scientific truth also. It may be pointed out here that different aspects of nature and the movements of the birds and animals were considered the main indicator of the endogenetic happenings. At the time of the volcanic eruption and earthquake, the poet has mentioned a graphic picture of the natural phenomena, such as the dreadful fall of fire-brands from the sky, the cracking of the lightning, a shower of blood (probably lava), the sudden appearance of a dark circle in the vicinity of the sun, the abrupt darkening of the quarters by the emergence of dusky clouds, the roughness of wind, pale and pleasant appearance of the sun and the moon, the strong and unnatural agitation in the waters of the sea; the untimely occurrence of eclipse (probably due to volcanic dust), the whirling winds etc.[36] Regarding the cause of the volcano eruptions, mention is made of internal forces termed as Sattva[37] in the Rāmāyaṇa. Here the word Sattva is explained as 'beings', but one of the meanings of Sattva is energy or force also[38].

Volcanoes

The Rāmāyaṇic people had definite knowledge of volcanoes and the Rāmāyaṇa clearly mentions the volcanic eruptions and geseous activity in combination with orogenetic processes[39] consisting of Jvālā (lava), Dhūma (smoke) and Reṇu (dust)[40]. Abrupt large depression of the earth crust, gushing out of subterranean water, rumbling sound of the interior of the earth, burning of a place with the fire of Volcanic activity (literally Rāma's arrow) and origin of a characteristic landform i.e. desert and two craters aglow on a mountain[41] are clearly mentioned in the Rāmāyaṇa. There is a reference of active volcano mountain in the epic[42]. The epic records a volcanic eruption in the Daṇḍakāraṇya region covering an area of one hundred yojanas[43]. The best example of volcanic plateau is Deccan, built up of horizontal lava sheets, now dissected into uplands, hills, valleys and plains. The terms Hayamukha and Vaḍavāmukha[44] seem to indicate active volcanoes with craters in the eastern region of Asia. From the account of Jalod sea and surrounding region (Bering sea) as mentioned in the Rāmāyaṇa; it becomes obvious that the author of the Rāmāyaṇa has drawn a graphic picture of volcanic eruptions and their devasting effect over the surrounding areas. Such volcanoes are very common along the western coast of the Pacific Ocean (Fig. 2.1).

Earthquakes (Bhūkaṁpa)

The science of Seismology received due attention in India during the Rāmāyaṇic age. It was studied from two angles of

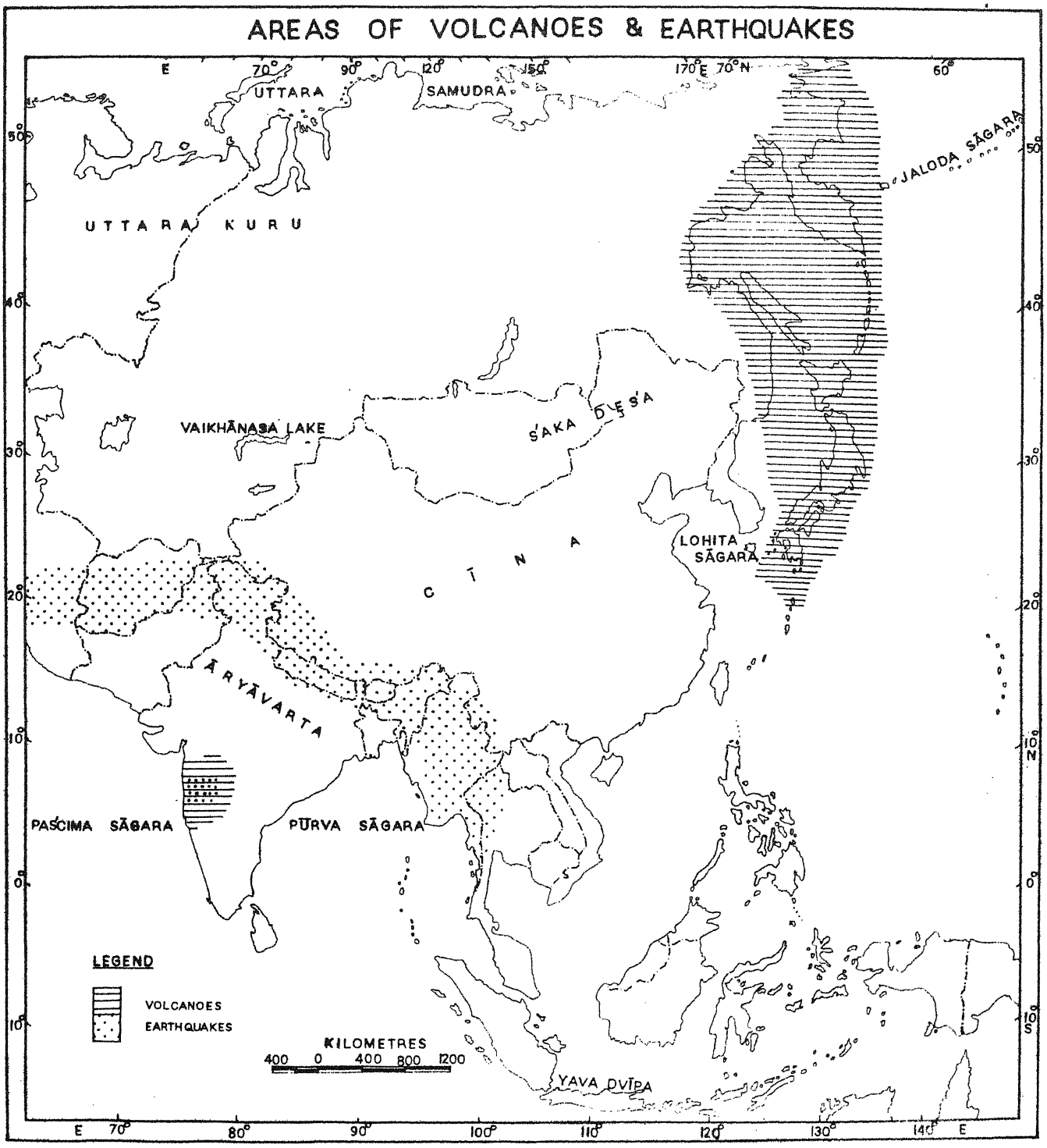
AREAS OF VOLCANOES & EARTHQUAKES
UTTARA SAMUDRA
UTTARA KURU
JALODA SĀGARA
VAIKHĀNASA LAKE
ŚAKA DEŚA
CĪNA
LOHITA SĀGARA
ĀRYĀVARTA
PAŚCIMA SĀGARA
PŪRVA SĀGARA
YAVA DVĪPA
LEGEND
VOLCANOES
EARTHQUAKES
KILOMETRES
400 0 400 800 1200

FIG. 2.1

visionoccult and scientific, therefore, two phases have been intermixed and much of the facts are mythological and imaginary in nature. Regarding the cause of earthquake, the Rāmāyaṇa avers the three following reasons[45]:

(i) It is caused by the Sattva (force) of the earth's interior, as mentioned above in the case of volcanoes.

(ii) It is produced by the tired panting of quarter elephants who bear the burden of the earth and

(iii) It is a consequence of rumbling wind (gaseous) disturbance in the interior of the earth.

Bhūkaṁpa (earthquake) as the name implies is the shaking of the earth's crust[46]. The term has been repeatedly mentioned in the epic[47] and gigantic mountains are rendered to crumble[48] and to shake[49] intensively. It is well-known fact that majority of earthquakes have originated from the great plains of India or from tne peripheral mountain ranges to their north, west and east. A large number of earthquakes have been recorded in Himalayan mountain belt during the Rāmāyaṇic age[50] because it is the zone of weakeness and strain implied by the severe crumpling of rock-beds in the elevation of the Himalayas which has, therefore, not yet attained stability[51]. This does not mean that the Peninsular part of India was a region of high stability during the Rāmāyaṇic age. Occasionally, however, very severe shocks were felt in some parts of the Peninsula, particularly around Pancavatī and Kiṣkiṅdhā region[52] of the Rāmāyaṇic India. Thus, from the study it becomes obvious that Peninsular part of India was not a stable land mass during the epic age and it can also

be confirmed by the Koyana earthquake of December 11, 1967 a first recorded major tectonic earthquake in the Deccan Peninsular Shield.

Works of Rivers, Glaciers, Winds and Seas

Various geomorphological patterns and changing face of the earth are alluded to in the Rāmāyaṇa[53].

The Rāmāyaṇa mentions the descent of the rivers from the mountains and flowing seawards[54]. Vālmīki has given a vivid picture of the nature of the flow of the Gaṅgā while debouching from the Himavāna to the plains. Here, mention is made of river valley development i.e. valley deepening and valley widening with corrasion and attrition in the foot of the mountains[55]. The epic refers to vertical as well as lateral erosion by the rivers in the rainy season[56] and on non-resistant steep banks[57]. The rivers are said to carry sand particles in the water which they transport far and wide[58]. The upper course of the Yamunā was termed Śilāvahā[59] which signifies the presence of the boulders and pebbles in the bed in its upper reaches.

In the Rāmāyaṇa, the technical terms i.e. Sandhi, Yugma, Prayāga and Saṁbheda[60] are used to denote the confluences of the rivers. The chief characteristics of the large rivers are the formation of the ox-bow lakes, delta and meanders and the term Punarāvṛittatoyā has been used for a river of meandering nature[61]. The Rāmāyaṇa refers to various technical terms for riverine geomorphological patterns such as Prapāta (water fall), Prasravaṇa (seepage), Udbhida (spring), Darī (hollow), Nirdara (cave),

Kandara (mountain gorge), Gahvara (cirque), Dronī (valley), Guhā and Kandarā (cavern) and Pulina (sand beach)[62].

The Rāmāyaṇic people also observed the works of glaciers, winds and seas. The Gaṅgā is named as Himavatī due to its source in the molten water of the Himalayan glacier[63]. Excessive snow fall on the Himalaya in the Hemanta ṛitu, snow melting due to sun-shine and glaciated topography have been marked in the Rāmāyaṇa[64]. The Rāmāyaṇic people have recognised the erosive power of wind[65]. There are references to coastal plains, termed as 'Velābhūmi' or 'Velātaṭa', sea cliff' known as Anūpa, beach (Pulina) and marine erosion due to high waves[66]. The Rāmāyaṇa has made very subtle observation of oceanic lakes[67].

Thus, from the study of the Rāmāyaṇa, it becomes clear that topography, relief building agents and their resultant topography have not been left out of the campus of the versatile genius of Vālmīki. Occasionally, the mythological stories inserted with the materials make the literary sources to some extent vague, yet the Rāmāyaṇic people had scientific attitude.

(b) Atmosphere

The atmosphere is essential for the existence of human being and it lies beyond the complete control of man. The Rāmāyaṇic people have made the most outstanding contribution in the field of climatology and their methodology was of unique value in tracing the logical knowledge of atmospheric phenemena. Here in the succeeding lines an effort has been made to achieve

a logical development of climatology as flourished during the Rāmāyanic age.

(i) Atmospheric Layers

'The Rāmāyana provides a lot of information regarding the atmosphere, its conditions and cosmic regions up to the distance of the moon from the earth. The entire atmospheric and cosmic regions have been divided into nine regions and the last, being the longest one, covers 80,000 Yojanas. The other regions of the atmosphere (vertical expanses) are also given but their fundamental divisions are unknown, therefore, they are mere flight of fancy, yet we may deduce the modern division of the atmosphere and cosmic regions into troposphere, tropopause, stratosphere, ionosphere and various cosmic layers and their recent researches as carried on by sputniks and man-made Satellites'[68].

The mythological origin of the atmospheric layers is mentioned in the Rāmāyana and they are said to be seven in numbers[69]— Vātaskandha later known by the name of Pravaha, Āvaha, Udvaha, Samvaha, Vivaha, Parivaha and Parāvaha. According to the height, the epic refers to seven regions or layers of the atmosphere. In these, the first belongs to sparrows and other birds living on grains. The second region is of those birds living on fragments of food left at a meal (e.g. crows) and on fruits (e.g. parrots), the third is of Bhāsas, herons and ospreys, the fourth is of hawks, the fifth is of vultures, the sixth is of swans and the last i.e. seventh is of Garuda[70]. Thus, we can

infer the height of the atmospheric layers from the flight of the birds but from this we cannot search very accurate factual data of the atmospheric layers.

(ii) Temperature

The sun is the primary source of light and radiation. In the Rāmāyaṇa, the sun is said as the possessor of rays causing warmth and determinant of the seasons due to which the temperature goes high or low at different places (or latitudes)[71]. It is clearly mentioned that slanting rays of the sun give lesser heat and vertical ones greater heat during the different periods of the day i.e. morning, noon, and evening[72] and winter and summer solstice[73]. The phenomena of scattering of the sun's light, radiation, insolation and reflection are mentioned inconsistently. The decrease in temperature with the increase in height and unbearably low temperatures at an immense height is alluded to in the epic[74]. Intensive insolation and high temperature as an agency of dispersion of the existing clouds[75], insolational heating of the oceanic waters[76], formation of clouds due to solar heating of the ocean[77] and evaporation by the sun's rays[78] are clearly referred to the Rāmāyaṇa.

Seasons

The climatic variations from time to time were so minutely observed by the ancients that they had developed a concept of dividing the year into six seasons[79] which were formed as a result of the sun's position in the northern and southern

(Uttarāyaṇa and Dakṣiṇāyaṇa)[80] hemisphere. Their descriptions in the Rāmāyaṇa give a clear idea of the temperature and other phenomena. The names of the seasons are Vasanta ritu, Grīṣma ritu, Varṣā ritu, Śarad ritu, Hemanta ritu and śiśira ritu and their details are given below.

Vasanta Ritu (Spring Season)

It occurs in the months of Caitra and Vaiśākha and is considered the best season of the year. It is noted for congenial and pleasing climatic conditions[81]. In this season Cuckoo captivates the heart by her enthralling notes and the trees assume a delightful appearance with their green foliage and fragrant blossoms. The areas around Citrakūta and Pampā lake are noted for beautiful scenery during the spring season[82].

Grīṣma Ritu (Summer season)

After the spring season, the hottest season, known as the Grīṣma (summer) occurs in the months of Jyeṣṭha and Āṣāḍha when temperatures grew higher due to the blazing sun. The Rāmāyaṇa lucidly mentions the summer conditions with scorching heat[83], due to which the wind was very hot during this season and depletion of water in the rivers and ponds[84]. These references clearly show that extreme drought and intense heat were the two great characteristics of this season.

Varṣā Ritu (Rainy season)

This season occurs in the months of Śrāvaṇa and Bhādrapada being most important for agricultural purposes, and

is associated with thunderstorms, lightning, rains and other atmospheric phenomena. The description of the rainy season has been vividly given in the Rāmāyaṇa from the Prasravaṇa mountain near Kiṣkindhā which brings into light the weather conditions during this season in the bulk of India. In this season, sky becomes overcast with clouds, therefore, neither a star nor the sun comes to view. Having sucked up the water of the oceans through the sun's rays, the sky is giving birth to life-giving showers as a foetus carried for nine months viz. from October to June[85]. The peak period of rainfall occurs in two months starting from Śrāvaṇa, but rainfall continues, though intermittently till Śarada ritu[86]. In rainy season, the sky becomes free from dust due to rains, air becomes cooler and moisture laden and the aggravation of the hot weather evils almost disappears. The woodlands on which the clouds pour their copious showers look more charming during the afternoons. The thundering clouds carrying big load of water, resume their journey. The forest regions become gay due to charming and joyous dance of peacocks and the earth assumes an attractive appearance by its corn fields and woodlands[87]. Clouds overcast sky and when obstructed by high relief, they cause orographic rain[88]. Rivers are in spate and run in a serpentine course assuming a white, ruddy and ashy colour due to contact with mountain minerals. Rainfall is torrential and there is appreciably denudation of the river banks[89]. This season known as Prāvṛidakāla (rainy season)[90] is most suitable for sowing seeds into the fields and Jambū (rose-apple) and mango-fruits ripen in this season[91].

Śarada Ritu (Autumn season)

The months of Āśvina and Kārtika form the Śaradaritu which is renowned for its natural beauty. The main characteristics of this season are described vividly in the Rāmāyaṇa. The earth is saturated with abundant rainfall and filling the rivers and tanks. Having discharged their water while sailing in the front of mountains with a prolonged and deep rumbling, the clouds are fully at rest. The rainy winds laden with moisture and full of great fury have ceased to blow. The sky becomes free from lightning and cloud and quarters look bright. The rivers flow in a narrow course and their banks shine brightly due to fresh bunches of Kāśa grass. The paddy ripens in this season and is harvested[92].

Hemanta Ritu (Winter Season)

Following the Śaradaritu, the Hemanta ritu covers the months of Mārgaśīrṣa and Pauṣa. In this season, the sun shines in the southern hemisphere, therefore, the northern hemisphere is not pleasant due to cold winds and winter season. The Himalayas are always covered with snow, and during this season abundant snowfall occurs in this region and Himalaya perceptibly justifies its name i.e. Himavāna. The days become pleasant and afford delight by the touch of the sun's rays. The cold westerly winds, as usual in this season, prevail in the country. Fine weather in this season ensures rich harvests. Snowfall, mist, fog, frost and hail are the general atmospheric phenomena occurring in this season. The first fruits sacrifice (Āgrāyaṇa)

in which first grains of rice was offered to the gods and manes, was performed with the commencement of this season[93].

Śiśira Ritu (Cool or Dewy season)

The Śiśira ritu prevails over two months - Māgha and Phālguna[94] and is noted for delightful and pleasing climatic conditions (specially the month of Phālguna)[95]. In this season, the rabi crops are in full vigour and growth. Cold begins to wane and the weather becomes delightful.

Thus, the above description of the seasons in the Rāmāyaṇa gives an idea of ancients' systematic scientific classification of the year into six seasons and presents a clear picture of the climatic conditions of the Rāmāyaṇic India which is most important from the view point of modern Meteorology. So much of subtle observation at such an early date is an achievement of no mean order.

(iii) Winds

Winds are dominantly horizontal air motions with respect to surface of the earth. Of all the elements of climate, winds are prominently described in the Rāmāyaṇa. It appears that the people of the Rāmāyaṇic age had marked and named winds according to their strength and climatic phenomena associated with them. Although their descriptions do not correspond to the modern scientific knowledge yet the ancients had an exact idea of the wind direction and velocity.

Keeping in view the chief characteristics, we can classify winds into two main types as mentioned below:

(a) Vāyu or Vāta

The word Vāyu appears to be used in the sense of delightful breeze free from dust[96], except on certain occasions when it is strong and rainy[97]. The term Vāta[98] or Mahāvāta[99] is used in the sense of violent wind or storm. It encompasses all and removes distress[100].

(b) Maruta or Marudgaṇa

The Marutas are known from remotest antiquity and are called as sons of Rudra and Pṛśni[101]. They are (Marudgaṇa) fortynine in number[102]. The description of the Marutas corresponds with the present monsoon winds. They are mentioned as destructive. This shows that they were associated with turbulence. They blow strongly and vehemently with huge noise causing rains by carrying the clouds to higher altitudes[103].

The Rāmāyaṇa mentions the west winds (Paścima Vāyu) i.e. West Marutas blowing in the Hemanta ritu (winter season) saturated with snow, causes meagre rains[104]. The Pūrva Vāyu (East Marutas) dominates (Fig. 2.2) the rainy season causing adequate rains[105]. There are references to mountain winds in intermontane valley[106], dry, dusty and gusty winds[107], sea breeze[108], violent storms[109] (Pravāta) and cyclones[110] (Prabhanjana) which cause heavy loss of life and property.

(iv) Formation and Classification of Clouds

The clouds are formed of minute particles of water and are good indicators of weather conditions, so they were studied intensively by ancients. They are very important to geographers for a number of reasons e.g. precipitation, heat budget, air temperature by their reflection and scattering of solar radiation, absorption of earth radiation etc.

The Rāmāyaṇa mentions the formation of clouds and rainfall caused by the sun[111]. It is clearly mentioned in the epic that the sun during nine months (Oct. to June) of the year, attracts water which is the essence of all fluids and then during the subsequent three months pours it down upon the earth as shower. Due to insolation, moisture evaporates, causing increase of humidity and this process produces clouds[112].

The Rāmāyaṇa refers to different synonyms of clouds, which bear significant scientific meanings. They are:

(a) Abhra[113]- Those clouds which do not bring any rainfall are known as Abhra. They may correspond to cirrus clouds.

(b) Megha[114]- Those clouds which give or sprinkle water are called Megha. In modern terminology, these are Nimbus, Nimbostratus. In autumn season, they bring meagre rainfall and are of immense expanse, found in mountain tops.

(c) Amouda or Vāridhara or Toyadhara or Balāhaka[115]- As their name suggests that they are rain-bearing clouds in the rainy season. They have lightning and assume various forms and

produce deep rumbling sound. They are full of profuse water and bring excessive rains which is extremely destructive. They appear in mass on the mountain peaks and pour rains[116]. Most probably these are Altostratus and cumulonimbus clouds.

(d) Parjanya[117]- The rain-bearing cloud of the rainy season is also known as Parjanya because it is said that it nourishes and sustains all beings.

(e) Jīmūta[118]- The clouds Jīmūta beget life. In the Rāmāyana these clouds are said to be dark-blue in colour.

Besides the above classification of clouds, we may further classify clouds according to their colour. The Rāmāyana[119] refers to white, red, blue, grey, yellow, madder, black and coppery clouds.

(v) Rainfall

This is the most picturesque phenomena of the atmosphere. The majority of the Rāmāyanic verses explain the process of rainfall. The Rāmāyanic people had considered that rainfall is the result of the interactions of the sun and surface water[120].

As mentioned earlier, the Marutas are associated with rainfall and the epic distinguishes between the east and west Marutas with regard to their rain giving characteristics[121]. The Aryans living in the fertile alluvial plains of northern India, attached greater importance to the Marutas. The Rāmāyana vividly explains that the greater rain was received by the easterly winds (South West Monsoon[122]). During the rainy season,

masses of cloud floating in the atmosphere hide the dawn, sun and moon, therefore, the daily pursuits of the people were suspended[123]. These clouds are obstructed by high mountains and cause orographic rain[124]. It is said that the people of Ayodhyā made great hue and cry as they suffered much from flood during the rainy season[125]. India gets more of her rain from the south-west monsoon. The autumn rain was duly welcomed because the rain is said to delight and bedew the wheat and barley crops which stand in the field during the winter season[126].

Indian rain is uncertain. It brings greater catastrophes by its delayed appearance or early departure than those caused by less amount of rain. Sometimes, there is an unusually long drought causing sufferings to the agriculturists. Such droughts attended by famines are referred to the Rāmāyaṇa[127]. On such occasions sacrifices in honour of Indra (rain god) and Parjanya (rain-clouds) were performed[128].

(vi) Other Atmospheric Phenomena

Lightning and thunderbolt are frequently mentioned in the Rāmāyaṇa[129] as an atmospheric disturbances. Dew formations on the sandy margins of the river banks[130] in the Hemanta ritu and in this very season, there are also references to frost (Tuṣāra) which cause the forest vegetation to wither[131], and disappearance of mist (Nīhāra) through diurnal rise of temperature[132], very dense fog in the vicinity of the earth's surface[133] and snowfall[134] (Himadhvastā). Besides these, hail (अश्म वर्षा), rainbow (इन्द्रधनुष , इन्द्रचाप , शक्रायुध , शक्रचाप), sun-shine, solar

halo, lunar halo, clear sky, overcast sky, dust storm, gale and thunderstorm (निर्घात) are also referred to the Rāmāyaṇa[135].

(vii) Weather-Forecasting

Though, the Rāmāyaṇa does not mention directly the methods of weather-forecasting yet we may gauge an idea from the description of the seasons that the people knew well the natural methods of weather-forecasting systems. These systems were of greater use for the agriculture as well as many other vocations. From the close study of the Seasons, we may say that the following methods of weather-forecasting have been in practice during the Rāmāyaṇic age.

(i) Methods of weather-forecast based on the observations of speed and direction of the wind.

(ii) Methods of weather-forecast based on the observations of the changes in trees and creepers etc.

(iii) Methods of weather-forecast based on the observations of the activities of some mammals, birds, reptiles, amphibians, fish and insects.

(iv) Methods of weather-forecast based on the observations of some physical changes in the atmosphere appearing to be around the sun and the moon viz. halo etc.

(v) Methods of weather-forecast based on the study of location, movements, conjunction etc. of the planets and stars.

(vi) Methods of weather-forecast based on the study of the cloud forms and other sky features such as lightning, harricane, thunder, rainbow etc.

Thus, it becomes obvious that the ancients had considerable knowledge about the weather and climatic conditions and they precisely observed them. Their attitude was quite scientific because the earth and the atmosphere had been their laboratory wherein the animals, plants and other natural objects had to serve the purpose of instruments and equipments.

(c) Hydrosphere

(i) Oceans

The word Samudra or Sāgara has been frequently used in the Rāmāyaṇa which literally means 'gathering of water'. A river empties its water into the seas, hence it is named Saritāpati Nadīpati[136]. The Rāmāyaṇa reveals that the volume of water in the sea is constant, it neither increases nor decreases[137]. The name Lavaṇārṇava refers to the salinity of the water[138].

By the time of the Rāmāyaṇa, the knowledge of the seven oceans had come to prevail[139] but in the epic the names of all the seven seas do not occur. There are references to four seas[140] too in the epic, and in these three, the Paścima Sāgara[141] is the Arabian sea; the Pūrva Sāgara[142] is the Bay of Bengal and the Dakṣiṇa Samudra[143] is the Indian Ocean. The Uttara Samudra[144] (Northern ocean) has been identified with the North Arctic ocean[145] (Fig. 2.3) and there appears to be no very positive and strong ground to disbelieve it.

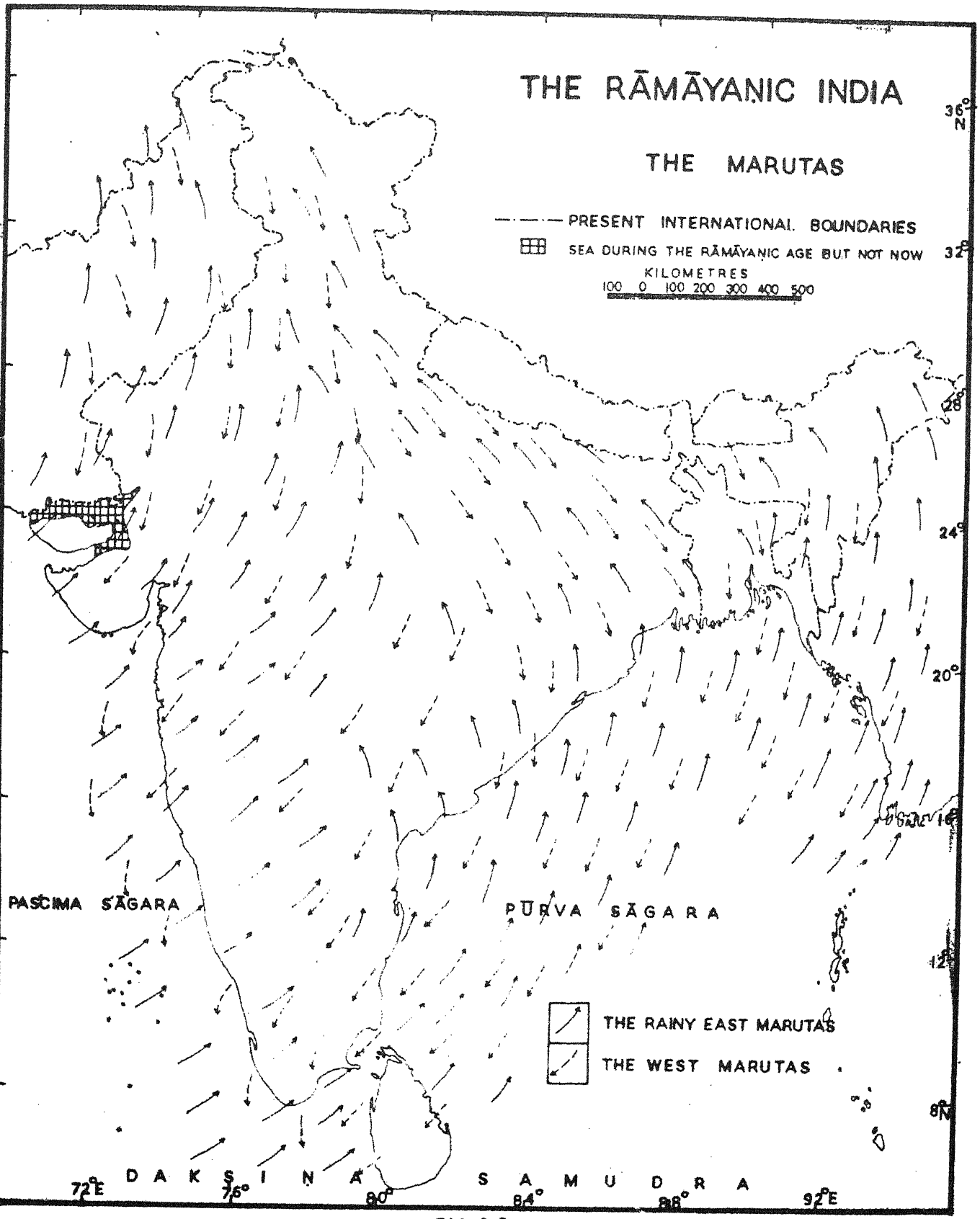
THE RĀMĀYANIC INDIA
THE MARUTAS
PRESENT INTERNATIONAL BOUNDARIES
SEA DURING THE RĀMĀYANIC AGE BUT NOT NOW
KILOMETRES
100 0 100 200 300 400 500
36° N
32°
28°
24°
20°
16°
12°
8° N
72° E
76°
80°
84°
88°
92° E
PASCIMA SĀGARA
PŪRVA SĀGARA
DAKSINA SAMUDRA
THE RAINY EAST MARUTAS
THE WEST MARUTAS

FIG.2.2

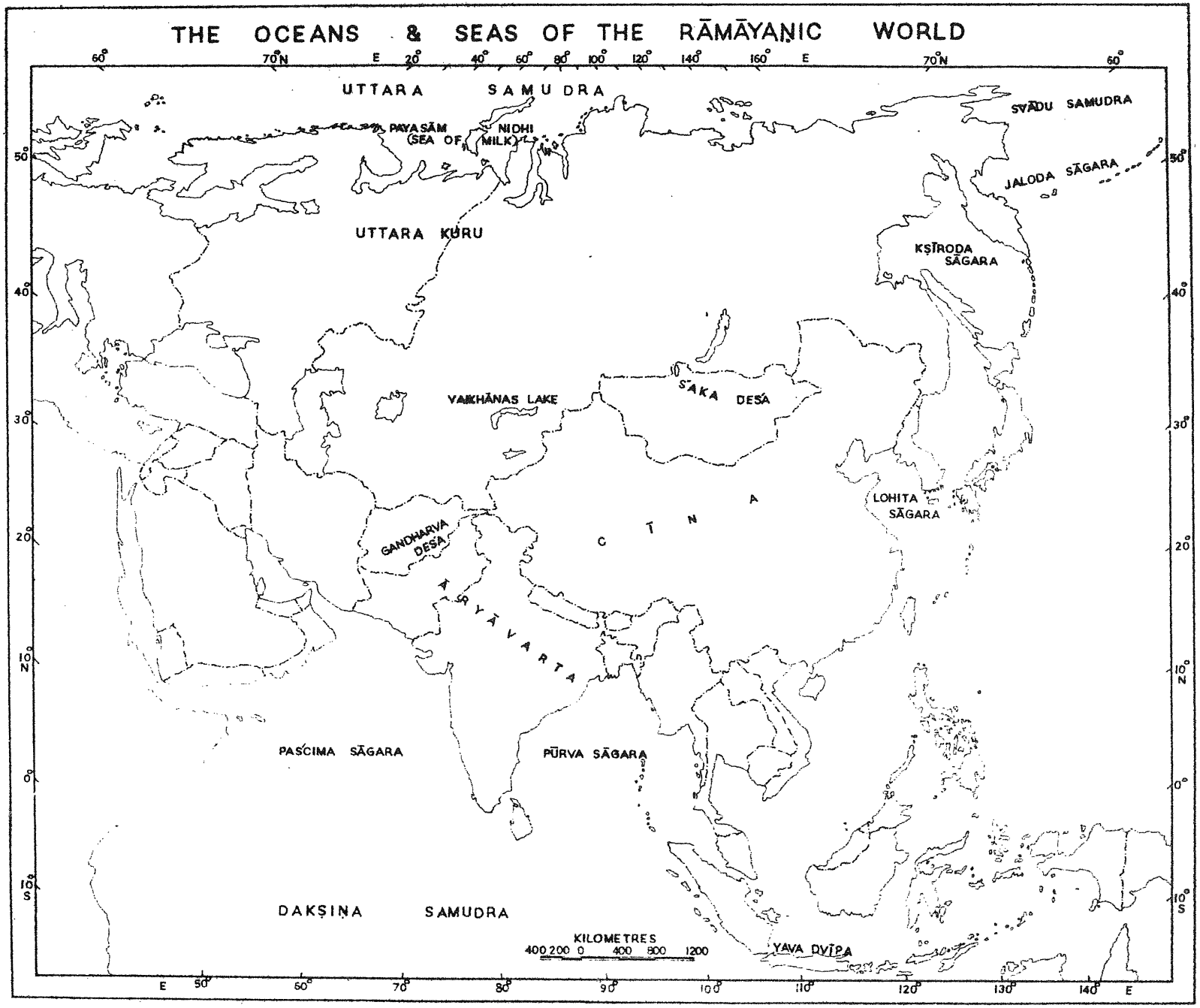
THE OCEANS & SEAS OF THE RĀMĀYAṆIC WORLD
UTTARA SAMUDRA
PAYASĀM NIDHI (SEA OF MILK)
SVĀDU SAMUDRA
JALODA SĀGARA
UTTARA KURU
KṢĪRODA SĀGARA
VAIKHĀNAS LAKE
ŚAKA DEŚA
LOHITA SĀGARA
GANDHARVA DEŚA
ĀRYĀVARTA
PAŚCIMA SĀGARA
PŪRVA SĀGARA
DAKṢIṆA SAMUDRA
KILOMETRES
400 200 0 400 800 1200
YAVA DVĪPA

FIG. 2.3

(ii) Types of Oceans

The oceans form one of the major units of environment of mankind. The knowledge of the exact extent of the various oceans and seas is not only the result of modern scientific advancement but the mercantile activities of the ancients also resulted in more compact knowledge about the extent of the seas[146] particularly east, north-east and south. The ancients had developed a system of nomenclature used for different water bodies according to their colours. Thus, the types of oceans are based mainly on the characteristics of the oceanic water caused by the presence of their contents. The existence of oceans of the Rāmāyaṇic age e.g. Kṣīroda Sāgara, (sea of milk), Ikṣurasa Sāgara (sea of Sugarcane juice), Lohita Sāgara (sea of wine) and Svādu Sāgara (sea of fresh water) should not be taken literally because oceanic waters differ from place to place in colour, salinity, density, bottom deposits etc. A vivid description of the seas of the Rāmāyaṇic age with their identification will be given in the sequel (Chapter VIII).

(iii) Submarine Mountains

The study of the bottom relief of different seas was developed because the relief controls the nature, character and motion of sea water. The Rāmāyaṇa[147] mentions various submarine mountains ~~(Fig.)~~ and ocean deeps in different quarters of the globe. Besides, submarine volcanic mountain[148] is also referred to in the epic.

(iv) Oceanic Fauna

The sea as a biological environment is the source of food and other products of value to man. With the progress of human society, the dependence of man on oceanic fauna has been increasing constantly. The ancients had gathered considerable knowledge of oceanic fauna. Whales (Timi), Large fish (Jhaṣa), Sharks, tortoises, sea elephants (Nāga), serpents (Bhujaṅga), alligators (Makara), fish (Mīna) and Crocodiles (Nakra) are specifically mentioned in the Rāmāyaṇa[149].

Fish form a rich source of food and nutrition to man. Fishing has long been the economic activity of variable importance in all the coastal regions. The Rāmāyaṇa[150] clearly mentions that maritime nations have well developed fishing industry.

(v) Waves and Tides

The sea has great mobility and respond quickly to any force acting upon it. The sea water has various types of motions e.g. waves, tides and currents. In these, the Rāmāyaṇa mentions only waves and tides.

The most observable and easily recognisable manifestation of the restlessness of the sea is in the form of waves. The sea water in the waves simply rises and falls with a slight to and fro motion of a rhythmic character, but it does not move ahead unless winds help in the forward movement of the water in the form of current. The Rāmāyaṇa refers to the surface waves created by winds and intimate relationship between the speed and fetch of the wind[151].

The occasional waves causing enormous damage to the invaded area known as seismic waves and storm waves are also mentioned in the epic. The seismic waves owe their existence to the earthquakes and volcanic eruptions in the sea. They attain tremendous dimensions with great force and fury[152]. The waves caused by the storms and strong winds are the elements of destruction and havoc on the coastal lands[153].

Tides and tidal waves are the most important among the various types of motions in the sea. The occurrence of tides has been a matter of interesting study since the earliest times. The people of the Rāmāyaṇic age were fully acquainted with tides and had come to know that the moon is its cause and the new and full moon days are its special occasions[154].

The above descriptions of the Hydrosphere shows that during the epic period, Oceanography had come to occupy a very prominent place and was dealt with separately.

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Lunarhalo - I.49.15.

Clear Sky - II.80.22.

Overcast Sky - II.93.4; II.114.13; IV.25.17,47.

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CHAPTER - III

BIOTIC AND MINERAL RESOURCES

BIOTIC AND MINERAL RESOURCES

Biotic and mineral resources have always secured their due importance in the pursuits of socio-economic activities of the people. India is a rich country abounding in natural resources, and the ancients, though highly spiritual in their outlook, were never indifferent to economic progress. They knew well the importance of biotic and mineral resources and devoted themselves to the promotion of national prosperity. The present chapter is an attempt to deal with the biotic and mineral resources, their classification, distribution and utilization.

(a) Natural Vegetation

Forests are one of the most striking feature of the land surface. Forests were dominant natural vegetal cover in ancient India. Their distribution mainly depends upon the topography and climate of the region. They have direct and indirect utilities. They render the climate more uniform and contribute to increase the fertility of the soil and provide scope for grazing of cattle. They are the main source of revenue of the state.

The chief characteristic of the Aryans' Civilization was the scientific preservation of the forests. The history shows that forests played an important role in the life of the Aryans. The philosophy of the Āraṇyakas and Upaniṣads must have been developed in the dense and plentiful forests. During the Rāmāyaṇic age, there were dense forests e.g. Citrakūṭavana,

Naimiṣāranya, Daṇḍakāranya, Pancavatī etc. which abounded in wild life. A very interesting and eventful part of Rāma's life is associated with his wanderings in the dense forests of India.

(i) Classification of Natural Vegetation

According to the references contained in the Rāmāyaṇa, natural vegetation can be classified in the following groups:

(a) Forests and

(b) Grasses.

(a) Forests : Types and Distribution

Generally, the distribution of forest types follows the rainfall features, physical and chemical properties of soils and meteorological conditions controlling and determining the distribution and types of forest. Besides, elevation exerts a greater influence on vegetation.

The diversity of Indian climate must have been responsible for the growth of different types of trees all over the country. Major forests of the Rāmāyaṇic India as mentioned in the Rāmāyaṇa are given below (Fig. 3.1). They are as follows:

(1) Caitrarath vana

It was located north of Yamunā source and west of Bhāgīrathī around Dehradun and Mussoorrie. It was a very thick forest belonging to Kubera[1].

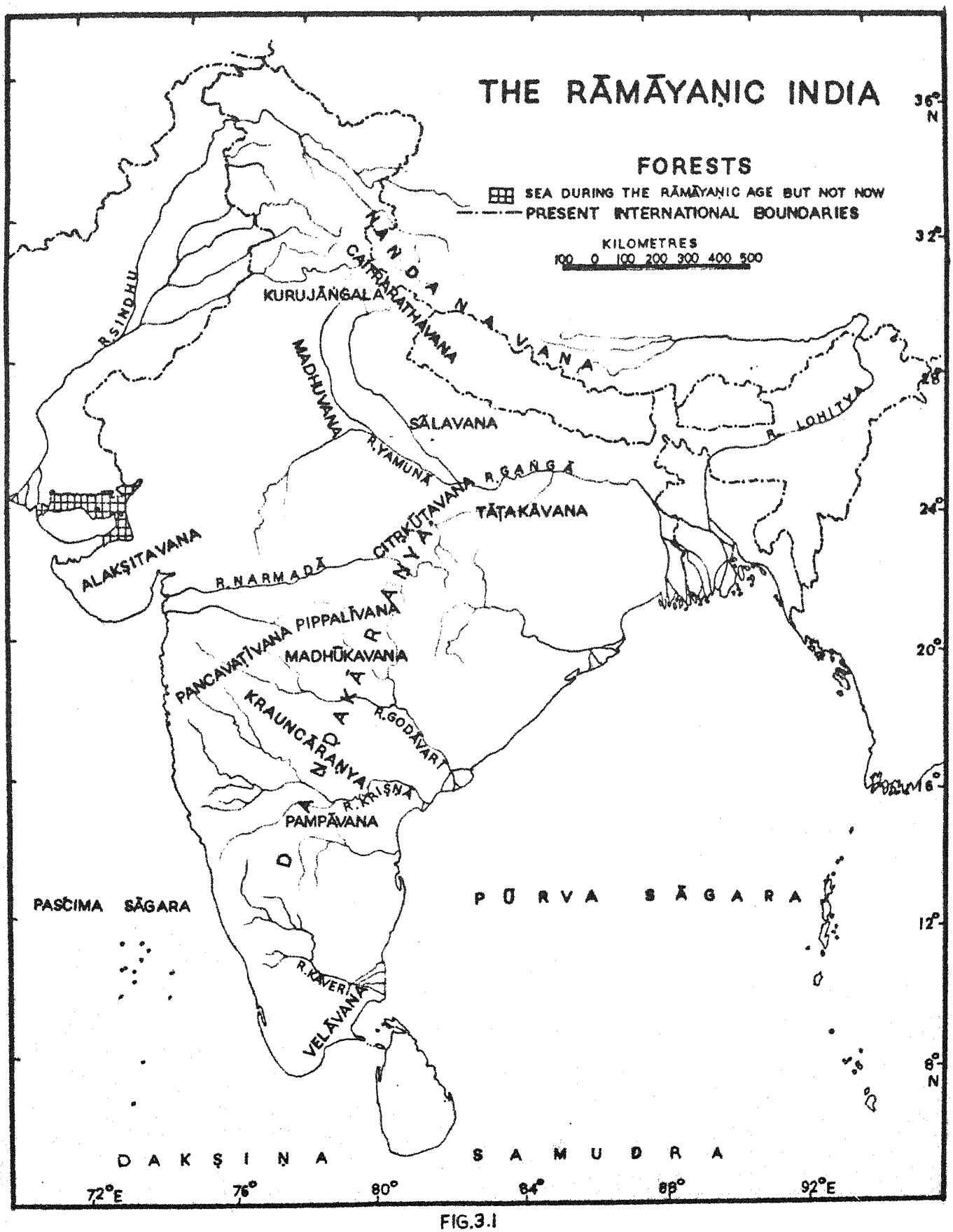
THE RĀMĀYAṆIC INDIA
FORESTS
SEA DURING THE RĀMĀYAṆIC AGE BUT NOT NOW
PRESENT INTERNATIONAL BOUNDARIES
KILOMETRES
100 0 100 200 300 400 500
R.SINDHU
KURUJĀNGALA
CAITRARATHAVANA
NANDANAVANA
MADHUVANA
R.YAMUNĀ
SĀLAVANA
R.GANGĀ
R. LOHITYA
TĀṬAKĀVANA
CITRAKŪṬAVANA
ALAKṢITAVANA
R.NARMADĀ
DAṆḌAKĀRAṆYA
PIPPALĪVANA
MADHŪKAVANA
PAÑCAVAṬĪVANA
KRAUÑCĀRAṆYA
R.GODĀVARĪ
R.KṚṢṆA
PAMPĀVANA
R.KAVERĪ
VELĀVANA
PAŚCIMA SĀGARA
PŪRVA SĀGARA
DAKṢIṆA SAMUDRA
72°E
76°
80°
84°
88°
92°E
36° N
32°
28°
24°
20°
12°
8° N

FIG.3.1

(2) Nandana vana

It was also thick forest in the Himalayas belonging to Kubera and was noted for scenic beauty[2]. Lodhra, Padmaka (a species of Sandal wood) and Deodāra were the main trees found in the Himalayas during the Rāmāyaṇic age[3]. Deodāra is one of the most important timbers of India.

(3) Sāla vana

Sālavana, in west of Ayodhya, was stretched between the Gomatī and Sarayū rivers. It was huge forest during the Rāmāyaṇic age[4].

(4) Kurujāṅgala

A forest stretched between the upper portions of the rivers Sarasvatī and Dṛiṣadvatī in north west of Hastināpura was known as Kurujāṅgala[5]. It was forest tract of Kuru janapada during the epic age and identified with the present Eastern Punjab.

(5) Bhārunda vana and Varūtha vana

These forests were located in northern India[6] but it is very difficult to identify them.

(6) Naimiṣāraṇya

It was very famous forest tract noted for sacrifices and abode of ascetics. It was stretched on the left bank of the Gomatī[7] and is identified by the same name or Nimsār forty-five miles to the north-west of Lucknow.

(7) Śaravana

According to the Rāmāyaṇa, the Śaravana (forest of reeds) was stretched in the Himalayan region[8].

(8) Tāṭakāvana

The district of Shahabad (Bihar) was peopled by Maladas and Kārūṣas in the epic age. In these two principalities, there was a dense forest inhabited by lions, tigers, wild boars and elephants and thickly set with Dhavas, Aśvakarṇas, Kakubhas (Arjunas), Bilvas (Aegle marmelos), Tindukas, Pāṭalas and jujubes. The forest region was occupied by Tāṭakā (a Yakṣa women), who was a sovereign ruler of the forest region, therefore, the forest was named after her[9]. The Tāṭakāvana also included some parts of Chotanagpur plateau.

(9) Citrakūṭa vana

The Citrakūṭa forest was stretched between the Shankargarh hills to the present Citrakūṭa which is identified with the modern Kamatnathgiri, sixty miles south-west from Prayāga. The forest was thickly set with umbrageous trees belonging to deciduous group such as Āmra (mangoes), Jambū (rose apples), Asanas, Lodhras, Priyāls, Panasas (bread-fruit trees), Dhavas, Ankolas, Bhavyas, Tiniśas, Bilvas, Tindukas, Venus (bamboos), Kāśmarīs, Arista (Azadirchta Indica i.e. margosas), Varṇas, Madhūkas, Tilakas, Badarīs (jujube trees), Āmalaka (emblic myrobalan), Kadambas, Vetra (cane), Dhanvanas and Bījakas (pomegranates). The dense forest was inhabited by tigers, leopards, bears, deer and elephants and was crowded with numerous birds[10].

(10) Alaksitavana

Alaksitavana in Saurastra covered the area between Alech hills to Girnar hills. It seems that during the Rāmāyanic age this region was caused with thick mantle of forest hardly allowing sunlight to pass the ground and hence justifying the name Alaksita[11] (not visible).

(11) Dandakāranya

The Daksina desa during the Rāmāyanic age was largely a forest tract with few inhabited regions. The most reputed of all the forests was Dandaka forest which stretched out from the Citrakūta hill and comprised of the region between the modern Bundelkhand and the river Krisnā[12]. Some authorities[13] hold that the Dandaka forest extended right across the peninsula from the hills of Orissa to the source of the Godāvarī. Perhaps, it stretched well up to the territory of the Tamil Kingdoms. Dandaka appears to have been a general name which comprised of all the forests from Bundelkhand down to the river Krisnā. According to the epic it was situated between the Vindhya and the Saival mountains and a part of it was called Janasthāna[14]. Agastya narrated to Rāma the details of this forest which was once conquered by Dandaka an ancestor of Rāma and brought under the authority of the imperial power reigning from Ayodhyā. During the Rāmāyanic age, the Āsramas formed the establishment in the forest regions and there were some routes through thick forests. The different forests of Dandakāranya were known by different names. They are as follows:

(a) Pippalīvana

According to the Rāmāyaṇa, from the Sutīkṣṇa Āśrama, the Āśrama of Agastya was 16 Krośas (32 miles) southwards where pippalī trees grew widely and due to the scent of the ripe pippalī fruits wafted by the breeze, it was known as Pippalīvana[15]. This forest covered the region south of Narmadā i.e. the surrounding region of Mahadeo hills.

(b) Madhūka and Nyagrodha vana

The great Madhūka and Nyagrodha forests were stretched between Agastyāśrama and Pancavatī[16]. These forests covered the Sahyadri Parvata or Ajanta range and the wide tract watered by the Wardha and Penganga rivers.

(c) Pancavaṭīvana

It was a charming forest and was close to the river Godāvarī, where metallic ores seem to have been abundant[17]. Pancavaṭī of the Rāmāyaṇa corresponded with the present Nasik and Pancavaṭīvana covered the region of Satmala hills. The trees like Sala (Borasus flabellifer), Tāla, Tamāla, Kharjūra, Panasa (Artocarpus Integrifolia), Nīvāra, Tiniśa, Punnāga, Cūta (mango-Mangifera indica), Aśoka (Sarca indica), Tilaka, Ketaka, Campaka, Syandana, Sandal wood, Nīpa, Parṇāsa, Lakuca, Dhava, Aśvakarṇa, Khadira, Śamī, Kiṁsuka, Pāṭala, Kadamba, Bilva, Arjuna, Kakubha, Jambū, Karṇikāra, Kurava, Dāḍima, and Bakula had widely grown in that region[18]. The above named trees predominate even at present around Nasik and the present Pancavaṭī. It was such a beautiful forest that Rāma and his party resolved to spend a portion of the period of their exile here.

(d) Krauncāraṇya

Krauncāraṇya was a dense forest at a distance of three Krośas from Janasthāna[19]. The hilly forest region known as Krauncālaya covered the region of Balaghat hills.

(e) Mataṅgāraṇya

The charming great forest abounding in flowers and fruits with all sorts of deer and birds, was six miles from the Krauncāraṇya in the east[20]. This forest would have covered the region between the river Manjra and Bhima south of Balaghat range and up to Riṣyamūka mountain and Paṁpā region[21]. Paṁpā has been identified with the Hampi region near Raichur. The forest was studded with the trees of Jambū, Priyāla, Panasa (Jack-fruit trees), Nyagrodha (Fiscus bengalensis), Plakṣa, Tindukas, Aśvattha (Fiscus religiosa), Karṇikāra, Cūta (mango), Dhava, Nāgakesara, Tilaka, Naktamālaka, blue Aśoka, Kadamba, Karavīra, Agnimukhya, red Sandal wood tree, (Rakta Pāribhadraka), Punnāga, Bakula, Uddālaka, Bījapūra, Śukla, Karavīra, Bhaṇḍīra, Nicula, Saptaparṇa, Ketaka, Atimukta etc.[22] The trees of Mataṅgāraṇya belong to the deciduous group.

(f) Velāvana

The magnificent forest might have expanded between Mahendra mountain (southern spur of Travancore hills) and the sea[23]. Velāvana was studded with the trees of Nārikela, Sāla, Tāla, Tamāla, Agura, Aśvakarṇa, Dhava, Baṁsa, Kuṭaja, Arjuna, Tilaka, Tiniśa, Bilva, Saptaparṇa, Karṇikāra, Cūta, Aśoka, Dāḍima, Vibhītaka, Karīra, Bakula, Nimba etc.[24]

Besides these forests, the Rāmāyaṇa mentions various dense forests i.e. Nīlavana south of the Yamunā, Prayāga vana encircling Prayāga, Madhuvana near Mathura and an unnamed forest between Sahya and Malaya mountains[25]. Moreover, various dense forests of the Daṇḍaka region are also referred to the epic but their names are not mentioned.

(b) Grasses

Grasslands must have been extensive all over the country specially the alluvial plains of the northern India. In addition to the use of grass as fodder, it was of high value in the ritual performances. Invariably in all religious and social activities grass formed an essential accessory[26]. In many religious and social observations of the Hindus, in present day, grass is still used as a sacred item.

It is remarkable that the grasses mentioned in the Rāmāyaṇa pertain to the subtropical type. The main grasses referred to the text are Darbhā[27] (desmostachya bipinnata) also called Kuśa[28] (Poa cyno suroides), Mūnja[29] (Saccharum Munja Roxb), Kāśa[30] (Gnarled Shrubs), Śādbala[31] and Śara[32] (reed).

(ii) Utilization of the Forests and Grasses

Since pre-historic times, the forest has supplied to some fundamental needs of men such as fuel, shelter, clothing and food. In the Rāmāyaṇic age, forests were economically very advantageous to men. They were governed by the kings[33] and provided a great source of economic prosperity to the society.

The utility of the forests was generally realised and the Rāmāyaṇa has attached great importance to afforestation[34]. The following advantages from the forests are enumerated in the epic:

(a) Forests were used as pasturelands[35].

(b) They were a great source of fuel and the forest dwellers used to cut them[36].

(c) Houses, carts, chariots, cots, wooden seat, wooden sandals, combs, umbrellas, palanquins, boats, ships and various musical instruments such as Vīṇā, Vipancī, Vallakī, Mridaṅga, Muraja, Paṭaha, Paṇava, Dundubhī, Diṇḍima, Ādambara, etc. were made of wood[37]. Sāla, Audumbara, Bamboo, Tāla, Deodāra and Sandal were very important trees on account of their economic utility.

(d) The trees like Bilva, Khadira, Palāsa, Śleṣmātaka, Deodāra, Plakṣa etc. were very important from the religious point of view because their wood was used in the sacrifices[38].

(e) Various powders, scents (gandha), cosmetics (aṅgarāga) and unguents (anuleps)[39] were prepared from forest resources and among them the sandal paste[40] was the most common.

(f) Medicinal herbs obtained from the forests were very common for besmearing the body[41].

(g) Honey formed the principal item of food and people were in the habit of drinking it during the Rāmāyaṇic age. It was easily available in the forests[42] and was a principal ingredient of various sweet preparations and liquors[43] (mādhvīka).

(h) Fruits and roots formed an important item of the food and diet of the ascetics consisted essentially of fruits, esculent roots and tubers that could be easily procured from the neighbouring forests[44]. It may be noted that fruits were also used for making condiments and drinks.

(i) Hermits used to put on Valkalavastra made of the barks of the trees[45].

(j) Grasses were equally important. Primarily they served as fodder[46] and litter at the alter. Besides, mats used in ritual performances[47] were also prepared from the Kuśa grass.

The foregoing discussion on the natural vegetation of the Rāmāyanic age reveals that most of the plants belong to tropical and subtropical monsoon vegetation. It is noteworthy that the life of the people of the epic age was greatly influenced by vegetation. It contributed much to the necessities of life. Agriculture, stock-raising and industries were directly or indirectly related with vegetation. As regards the industries related to vegetation we can gauge the various aspects of the economic life of the Rāmāyanic people and this can be taken as an ample proof of the developed state of industries. The Rāmāyana also mentions a long list of artisans and craftmen[48] from which we can deduce the high proficiency achieved by the people of that age.

(b) Animals and Animal Based Economy

The welfare of the people is associated with the welfare of the cattle. The cattle wealth of our country in the Rāmāyaṇic age had an intimate bearing on agricultural development, health and economic prosperity. Animal husbandry was an important occupation of the Aryans, therefore, animals and their products had an important impact on human beings. The Rāmāyaṇa[49] mentions the origin of different kinds of animals and birds in a mythological way.

History shows that cows and bullocks were the most valuable possessions of the people in ancient India. In fact, the three higher classes (Varṇas) of the society were engaged in preservation and rearing of the cattle in their own way but it was the main occupation of the Vaiśyas[50]. Animal husbandry, is clearly indicated by the references of the several pastoral villages (Ghoṣas)[51]. Animals were offered as Dakṣiṇā and presents[52] and constituted an important form of wealth. The science of cattle-breeding was well developed in the Rāmāyaṇic age. The cow for the Brāhmaṇa and horse for Kshatriya were indispensable. Bullocks formed an important means of transport and their services were available for various agricultural operations. Keeping in the view the necessities of the army, great emphasis was laid upon the improvement of scientific breeding of horses, elephants, camels and mules. The Rāmāyaṇa mentions that animals of improved breed mainly elephants and horses were imported from neighbouring janapadas[53].

(i) Classification of Animals

The animals of the epic age can be classified under two heads:

(a) Domestic animals and

(b) Wild animals and birds

Domestic Animals

The relation between man and animal had been very close in ancient period. The Vedic texts present before us a primitive form of man and animal relationship. Domestication of animals had been exclusive of any other economy in the earliest stages of human society when man led a mobile life[54]. Their wealth and prosperity depended upon the possessions of a large number of cows, bullocks, horses, elephants, sheep, goats, dogs, asses and mules. In the Rāmāyaṇic period large cities had sprung into existence and people enjoyed a more settled form of life than those of Vedic age.

The position occupied by the cows was unique in the society. In the epic, the cow along with Brāhmaṇa is the symbol of Aryan culture[55]. The cows were given to the Brāhmaṇas as well as on marriage occasions as gifts and were considered extremely meritorious forming an important part in the religious performances of the society[56].

Bullocks were the main draught animals, yoked to carts and ploughs[57] and some times were given as gifts[58]. Horses were also kept for riding, pulling chariots and were given as gifts[59]. They were sacrificed and offered in the Aśvamedha Yajña. The

Rāmāyaṇa[60] mentions that the horses of Kāmboja, Vāhlīka and Vanāyu region were of good-breed and it is said that Ayodhyā was crowded with horses of excellent breed[61]. The camels were used in riding, pulling chariots and were the beasts of burden[62]. In the Rāmāyaṇic age, asses and mules were harnessed in chariots and were given as presents[63].

Elephant was known to the Vedic Aryans and was tamed and domesticated in later Vedic period[64], but in the Vedic texts, there are no clear evidences to prove that an elephant was used in war. The Rāmāyaṇa is the first book in this context. Elephants were used for riding, for being offered as gifts and were regularly trained for the purpose of war[65]. The Rāmāyaṇa also mentions the species of elephants of excellent breed i.e. Airāvata, Mahāpadma, Anjana, Vāmana, Bhadra, Mandara and Mriga (born on Himalayas and Sahya ranges). Besides, crossbreeds like-Bhadra-Mandara-Mriga, Bhadra-Mandara, Bhadra-Mriga and Mriga-Mandara have been also referred to the epic[66].

Goats and sheep were freely given as gifts[67] in the epic age. The Rāmāyaṇa[68] mentions a species of goats termed as Praveṇa. The kings of the Rāmāyaṇic age were very fond of keeping pet birds and animals[69].

Wild Animals and Birds

Nature has endowed India with a magnificent asset of wild animals of different variety and beauty. The wild animals which are mentioned in the Rāmāyaṇa[70] are - lion, tiger, elephant, bear, pig, deer, jackal, hare, leopard, wild buffalow, antelope,

yak, gayal and percupine. The epic[71] also mentions the four principal species of deer i.e. Varāha, Ṛiṣya, Prista and Manārura. Among birds crow, swan, peacock, ruddy geese, wild duck, water-fowl, crane, vulture, osprey, locust, parrot, wood-pecker, buzzard, heron, howl, pigeon, mina, eagle and owl are referred to the Rāmāyaṇa[72].

The aquatic creatures such as fish, turtle, alligator, shark, crocodile, giant fish, frog, serpent and conche are mentioned in the Rāmāyaṇa[73]. Fishing was practised in the Rāmāyaṇic age. The fish was either hooked or killed with arrows and fishermen are said to use the nets to trap the fish[74]. The epic[75] also mentions the different kinds of fish namely Rohita, Vakratuṇḍa and Nalemīna.

(ii) Distribution of Animals

The distributional pattern of animals are mainly determined by topography and climate of the region but human factor also played an important part. The river valleys and plains of northern India best suited to pastures, were the main regions of cow-ox raising specially the banks of Tamasā and Gomatī rivers[76]. Horses were found in Kāmboja, Vāhlīka and Indus valley[77]. The Himālaya, Vindhya, Sahya mountains, citrakūṭa and Daṇḍakāraṇya region were rich for elephants of superior breed[78]. Rugged topography and dense vegetal cover were the fundamental factor for the growth of elephants in the above mentioned regions. The references clearly indicate that donkeys and mules were found in every janapada[79]. Camels were found in sandy and dry

region of the country. The river valleys[80] were equally recognised for sheep and goat raising but it is not mentioned clearly.

Lion, tiger, bear, wild pig, jackal, wild buffalow and deer were found in the forests specially citrakūṭavana, Pañcavaṭīvana, Daṇḍakāraṇya, Vindhyan forests, Himalayan forest and in the forests surrounding Ayodhyā[81].

Birds and aquatic creatures were mainly found in the vicinity of the lakes, ponds and river banks. The banks of Mandākinī, Narmadā, Pancasara and Pampā lake were crowded with different birds[82].

(iii) Animal Products and Utilization

It is clear throughout the world that milk and milk products are the best diet for human beings. During the epic age, milk and its products, chiefly clarified butter (ghrita) formed the principal ingredient of food. Cow's milk was considered undoubtedly the most important drink and processes of curdling and churning were well known to the people of that age. Milk, dadhi and ghrita[83] were extremely enjoyed by the people of that age.

In the Rāmāyaṇic age, meat was very common in the society. The Rākṣasas were very fond of meat and they are described as 'Piśitāsanas[84]. They did not hesitate to eat raw meat and even cannibalism prevailed among them[85]. Besides, the Aryans had developed the notion of clean and unclean meat[86], therefore, the flesh of deer and ram was held extremely

meritorious[87]. Moreover, eating of fish and birds was very popular in the epic age[88]. In an Aśvamedha sacrifice, numbers of animals were slaughtered and their meat was consumed by Kṣatriyas as well as the Brāhmaṇas[89]. Thus, it is evident that meat of animals as well as of aquatic creatures was usually eaten by the Āryans and the non-Āryans.

During the Rāmāyaṇic age, people used the skin of animals as Uttarīya, therefore, skin clothes were considered auspicious and holy. The sages of that age wore the skin of deer and antelopes[90]. The Rāmāyaṇa also indicates the progress of leather industry[91].

The woolen cloth was prepared from the fleece of sheep[92]. The whisks made of a yak's tail were regarded as essential for the installation ceremony[93]. It is remarkable that census of royal cattle was taken and the kings were very interested in such a census[94].

A detailed study of the Rāmāyaṇa, thus, reveals, that the people of the epic age were fully aware of the animal husbandry and had well developed livestock based economy. In the field of agriculture, warfare and in daily use, the animals played an important role, therefore, great emphasis was laid on the improvement of their breed and training.

(c) Minerals and Mineral Based Economy

The earth contains all the minerals and precious stones, therefore, termed as 'Ratnagarbhā Vasundharā'. Minerals have a

great bearing on human life as man has been using a number of minerals for his socio-economic development throughout human history. The present day human society owes much to minerals which form a valuable resource of a country. Minerals and metals form the life-blood of the industrial civilization. A careful husbanding of mineral resources and the rate at which mineral development takes place are among the principal indications of a country's economic development. The Aryans recognised the importance of minerals and gave them due place in their economic pursuits. During the Rāmāyaṇic age mining activity was carried on by the miners termed as 'Khanaka'[95]. The engineers known as Bhūmipradeśajña[96], were engaged in exploring new quarries and exploitation of mineral resource.

(i) Minerals

The minerals mentioned in the Rāmāyaṇa reveal that people of that age were well acquainted with numerous minerals and their utilization. Jambūnada or Svarṇa (gold), Rajata (silver), Ayasa (iron), Tāmra (copper), Trapu (Tin) and Śīśā or Śīśaka (lead) are the principal minerals of the epic age[97]. Among precious stones the Rāmāyaṇa refers to Vajra (diamond), Pravāla (ruby), Vaidūrya (Cat's eye gem), Vidruma (Coral), Sphaṭika (Crystal), Muktā (pearl), Indranīla and Mahānīla (Sapphires)[98].

(ii) Distribution of Minerals

On the basis of the study of the Rāmāyaṇa, the modern geologists can ascertain the regions of deposits of gold, silver

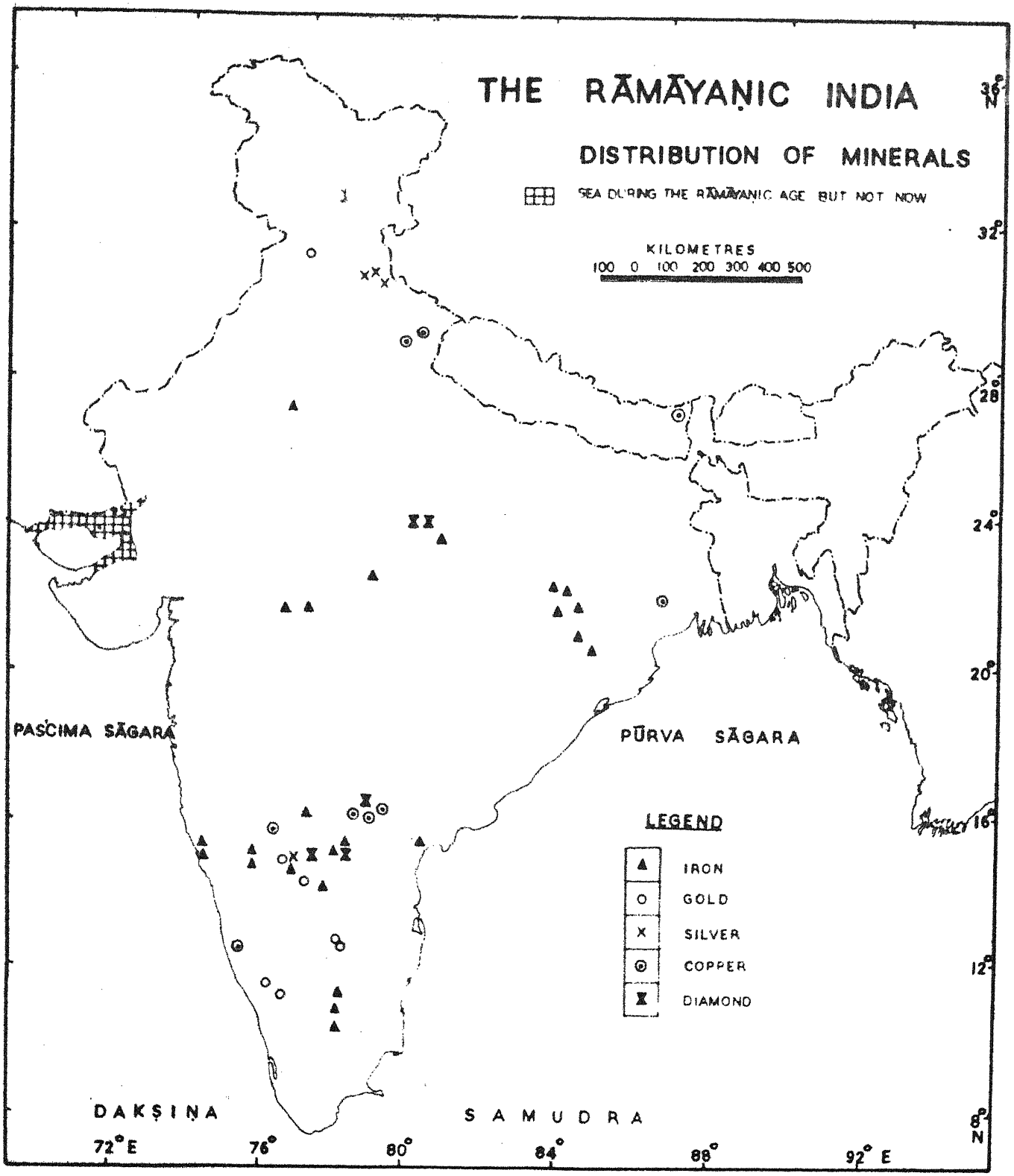
THE RĀMĀYAṆIC INDIA
DISTRIBUTION OF MINERALS
SEA DURING THE RĀMĀYANIC AGE BUT NOT NOW
KILOMETRES
100 0 100 200 300 400 500
PAŚCIMA SĀGARA
PŪRVA SĀGARA
DAKṢIṆA SAMUDRA
LEGEND
IRON
GOLD
SILVER
COPPER
DIAMOND
36° N
32°
28°
24°
20°
16°
12°
8° N
72° E
76°
80°
84°
88°
92° E

FIG. 3.2

and other valuable minerals. During the Rāmāyaṇic age, systematic investigation of mineral deposits and proper mining operations were essentially made. There had to be probably a scientific survey of mineral deposits and suggestive measures were given for their exploitation. In the epic, the mountains such as Himālaya, Kailāsa, Citrakūṭa and Ṛśyamūka are said to be storehouse of minerals of different shades and qualities[99]. Pancavaṭī region is said to be enriched with gold, silver and copper[100] (Fig. 3.2). The Rāmāyaṇa also mentions the mountain ranges of seashore full of gold and silver[101]. There are references to minerals in the mountainous regions of white, rudy and ash colours[102]. The epic mentions clearly that cascades running in serpentine courses are having water of different colours due to its contact with mountainous minerals[103].

Forested areas are also said as having the reserves of gold and precious stones[104] Jambūnada (gold) was taken out from the river beds[105]. Kosala janapada has been mentioned to be rich in mines[106] though at present no evidences are available.

It would be relevant to relate the areas of mineral deposits mentioned in the Rāmāyaṇa with those of the present. In the Rāmāyaṇa, the Himālaya is said to be rich in minerals and even today lead ore deposits are reported in Jammu and Kashmir, Himachal Pradesh, Almora and Tehri Garhwal districts of Uttar Pradesh. Silver is found in the Sutlej valley in Himachal Pradesh and copper ore is found in Shumahar area (Anantnag district), Kangan area (Srinagar district), Sikkim, Nepal and

in some parts of Kumaon. The presence of small quantities of gold in the sands of Himalayan river is well-known. Besides minerals, the Himalayan region is also rich in precious stones. Kashmir and Padar regions are noted for pale rubies and sapphires respectively[107]. In Citrakūṭa region, there are only bauxite reserves in Manikpur, bermiqulite near Karwi and silica sand in Mau tahsil of Banda district of Uttar Pradesh. Quartz and dolomite are also found in the vicinity of Citrakūṭa mountain[108]. In the region of Ṛiśyamūka mountain, copper ore in Kurnool district of Andhra Pradesh, gold in Anantpur district and at Bellary in Karnataka, manganese and iron ores in the Sandur hill range of Bellary district are available[109].

(iii) Utilization of Minerals

A nation's progress and power potential are largely measured in terms of its mineral wealth and its ability systematically to explore, process and use it to the best advantage. During the Rāmāyaṇic age, India had a fairly developed metallurgical industry. References to minerals obtained from the mountains and the complex military equipment which included large numbers of metallic weapons testify on the one hand to the knowledge of the refining of metals and on the other to the manufacturing skill of the people. The weapons[110] such as Pattisa (a kind of sharp edge sword), Śūla (dart), Parigha (club), Khaṅga (sword), cakra (discus), Bāṇa (an arrow), Śakti (javelin), Kunta (spear), Tomar (lance), Bhindipāla (sling for throwing stones), Daṇḍa (Staff), Dhanu (bow), Parasu (an axe),

and Śataghnīs (rocket or iron pikes) were made of iron. Besides, an axle of bullock cart, pestle, needle and various agricultural implements[111] were also made of iron.

Non-ferrous metals were used for preparing ornaments and articles of daily use. In the Rāmāyaṇic age, soldiers and kings decorated their weapons[112], chariots[113] and animals[114] with gold, silver and precious stones. During the epic age, 'both males and females delighted in wearing ornaments and richness of India in precious stones and metals and in pearls enabled them, perhaps engendered in them the desire to wear ornaments in profusion'[115]. Theskilled artisans of the Rāmāyaṇic age made beautiful articles of decoration with metals and jewels to enhance the beauty of the person and place. The epic refers to various ornaments made of gold and silver studded with precious stones such as Mukuṭa, Kirīṭa, Cūdāmaṇi, Kuṇḍala, Hāra, Hemasūtra, Hastābharaṇa, Valaya, Śroṇīsūtra (girdle), Nūpura (anklet)[116] etc. Besides ornaments, vessels, plates, disks, jugs, coins and idols were also made of gold and silver[117]. The Rāmāyaṇa presents a very luxurious lay-out of royal palaces containing seats and couches made of ivory, gold and silver[118].

India occupied a leading position in the industrial world of the past. Although direct informations for mineral based industries are meagre in the Rāmāyaṇa. It is obvious from the study that industrial activities were carried on as small scale industries in those days. The blacksmiths supplied various articles needed in human life from the fine needles

and razors to the sickles, plough shares and weapons. Goldsmiths worked in gold and jewels and ministered to the needs and fashions of the gay and rich. The epic mentions a long list of different types of artisans and cottage workers from which we can deduce a developed state of the small scale industry and high craftmanship[119].

The above study of the biotic and mineral resources indicates that people of the Rāmāyaṇic age were progressive and their achievements were quite scientific that give us a clue to their ancient technology.

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38. Rām. I.14.22-23,39.

39. Vide Rām. I.6.10; II.6.17; II.83.13; II.118.18,21.

40. Rām. II.7.3; V.5.13; V.10.8.

41. Rām. II.91.74-75; VI.74.33; VI.101.32.

42. Rām. II.56.8; V.Cantos 61-62.

43. Rām. V.11.23.

44. Cf. Rām. II.63.27; II.64.34; II.119.21; III.1.5,7,17,22; IV.1.116. N.B. The various fruits (or fruit trees) mentioned in the Rāmāyaṇa are - Āmra. II.91.30, Kadalī - III.42.13, Badarī - II.55.8, Bilva - II.56.7; Jaṁbū - II.91.51, Nārikela - III.35.13, Kharjūra - III.15.16, Panasa - II.91.30; Āmalaka or Āmalakī - II.94.9; Tāla - II.91.50; Tinduka - III.11.74; Priyāla - II.94.8; Kapittha - II.91.30, Bījapūraka - III.60.21; Kāśmarī - II.94.9; Madhūka- III. 11.74.

45. Rām. III.1.7.

46. Rām. II.91.29,79.

47. Rām. I.4.22; II.103.29; III.43.20; VI.126.4; VII.1.15.

48. Rām. II.83.12-15.

49. Rām. III.14.6-33.

50. Rām. II.100.41,47.

51. Rām. II.83.15.

52. Rām. I.14.50; VII.53.8.

53. Rām. I.6.22-23.

54. Saxena, D.P. (1976) Regional Geography of Vedic India, p.83.

55. Rām. I.25.15.

56. Rām. VI.125.44 and I.14.50 respectively.

57. Rām. I.31.17 and I.66.13-14 respectively.

58. Rām. VI.128.74.

59. Rām. II.63.3; II.70.29 and I.74.4 respectively.

60. Rām. I.14.31-37.

61. Rām. I.6.22.

62. Rām. II.70.29; II.82.32; VI.10.18; VII.25.36.

63. Rām. II.69.15,18 and II.70.23 respectively.

64. Saxena, D.P. (1976), op.cit., p.87.

65. Rām. VI.73.11; II.70.23 and VI.57.31 respectively.

66. Rām. I.6.24-25.

67. Rām. II.72.2.

68. Rām. III.43.36.

69. Rām. II.15.34; II.70.20; V.9.25; V.13.15; V.14.6; VI.35.32.

70. Rām. I.5.21; I.6.24-25; II.25.19; II.29.3; II.93.1-2; II.95.5; III.4.3; III.11.4; III.43.11-12; III.46.29-30; III.57.2-3; III.73.35,39; V.68.26; VI.10.11-12.

71. Rām. II.52.102.

72. Rām. II.15.34; II.95.3; II.103.43; III.11.3; 11I.47.47; III.73.12; III.75.12; VI.10.19-20; VI.17.28; VI.73.12; VI.89.37; VI.95.44,47; VI.103.20-22; VI.106.22; VI.108.11; VI.110.26; VII.6.55-58.

73. Rām. V.36.8; V.37.47; V.56.41; VI.4.93; VI.7.20; VI.21. 17-19; VI.22.28-29; VI.59.35; VI.69.66; VII.7.3,7.

74. Rām. III.51.27; III.68.13; III.73.14-15.

75. Rām. III.73.14.

76. Rām. II.46.17; II.49.11.

77. Rām. I.6.22.

78. Rām. I.6.23,25; II.96.8; III.4.3; III.11.4.

79. Rām. II.69.15,18; II.70.23,29; II.82.32; III.31.34; III.35.5; VI.10.18; VI.51.30; VII.25.35.

80. Saxena, D.P. (1976), op.cit., p.84.

81. Rām. I.5.21; II.93.2,17; II.95.5; II.96.5,30; II.103.41-42; III.73.35-39; VII.31.20.

82. Rām. II.95.3; II.103.43; III.11.3,6; III.73.12-14; III.75.30; IV.1.7,22 ff.; VII.31.21.

83. Rām. II.14.35; II.15.7 and III.47.48 respectively.

84. Rām. III.21.2; III.36.3; VI.47.18; VI.61.10.

85. Rām. II.119.19; III.10.6.

86. Rām. II.56.26; II.96.1-2.

87. Rām. II.56.26; III.11.57 ff.

88. Rām. III.73.13-14; IV.40.28.

89. Rām. I.14.30-39. Vide Sharma, R. (1971) A Socio-Political Study of the Vālmīki Rāmāyaṇa, p. 236.

90. Rām. II.3.11; II.15.5; III.1.7; III.74.32.

91. Rām. II.91.76; III.46.3; VI.19.12.

92. Rām. VI.75.9.

93. Rām. II.3.10.

94. Rām. I.14.50 and VI.95.27-28 respectively.

95. Rām. II.80.1.

96. Rām. II.80.1.

97. Rām. I.14.54; I.37.19; II.20.51; III.64.72; I.37.20 and III.47.46 respectively.

98. Rām. II.61.9; II.91.44; III.32.9; VI.77.3; VII.13.4; III.35.23 and III.42.16 respectively.

99. Rām. I.35.13; I.37.10,18; II.94.4-6; II.103.4; III.75.25.

100. Rām. III.15.15.

101. Rām. III.35.23-24.

102. Rām. VI.69.84.

103. Rām. II.63.19.

104. Rām. III.43.32.

105. Dube, S. (1967) Geographical Concepts in Ancient India N.G.S.I., p.114.

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110. Rām. I.28.3-10; I.27.12; I.56.5-12; III.20.15; III.22. 18-19; VI.8.16-17; VI.31.22-23; VI.79.4-5; VI.86.21-23; VI.95.25-26.

111. Rām. I.4.23; II.14.12; II.20.32; II.32.29,31; II.36.25; II.103.3; III.4.27; III.47.41.

112. Rām. II.31.30; II.99.20; III.20.6; III.25.8; III.26.10-11; III.44.1; III.51.10.

113. Rām. V.6.4,6; VI.95.30-31; VI.102.10-11.

114. Rām. I.72.23; VI.106.2.

115. Vaidya, C.V. (1933) Epic India, p.133.

116. Rām. I.6.10; I.14.18,54; II.32.5; II.43.14; II.60.19; III.5.15; V.10.33; V.58.103-104; V.66.1-5; VI.65.29; VI.128.10.

117. Rām. IV.50.34; I.16.21; II.9.49; VI.112.12; II.70.21 and VII.31.42 respectively.

118. Rām. II.10.14; II.16.8; II.19.17; II.32.5; II.72.2,11; IV.50.33; VI.10.11.

119. Rām. II.83.12-15.

CHAPTER - IV

AGRICULTURE

AGRICULTURE

Agriculture forms the principal source of human food - the foremost primary necessity. From the primitive stage of human civilization, agriculture has been claiming the greatest attention of man. In fact, the story of agriculture is the story of human civilization and the invention of grain farming may be considered as one of the most significant achievements in human society. In India, the development of agriculture dates back to the Vedic times when majority of people subsisted on it. Likewise the epics of India are replete with allusions to this economy and such references may form the basis of substantial discussion, tracing the type, form and spatial organization of agriculture as flourished during the time of epics[1].

(a) General Facts

The Sanskrit word 'Kriṣi' derived from the root 'Kriṣ' is used in the Vedas and Saṁhitās[2] to indicate agriculture. In the Rāmāyaṇa too this word recurs. The operation of tilling soil in the Vedic age meant cutting of furrows in the field with the wooden plough drawn by bulls, sowing of seeds in the furrows, reaping the corn with the sickle, laying of the bundles of corn on the thrashing floor, thrashing and finally winnowing. The Rigveda and Śatapatha Brāhmaṇa refer to systematic farming, ploughing, sowing, reaping and thrashing[3]. Thus, careful ploughing, timely sowing and increasing fertility of the soil were the main characteristic features of the agriculture during the Vedic period. Agriculture seems to have made a real headway

at a later stage. The Rāmāyana informs that the agriculture as the science and art of raising plants for the human use was known as 'Anrita'[4]. So, it is evident that the Aryans knew well the art of farming and they were well-versed in the mixed farming.

In a predominantly agricultural country like India where the cultivators are poor and backward in all respects, the responsibility for the development of agriculture lies mostly on the state. Traditionally in India, the kings have been the guardians of agriculture since the remote historical times and as such the Rāmāyanic period monarchs protected the fields and contributed largely to the development of agriculture by adopting sound planning policies. The king being the master of the land[5], was supposed to have a complete knowledge of the agriculture - a subject included among the eight fold administrative items of the state[6] and he used to take the sixth part[7] of the agricultural produce as agriculture tax for the facilities provided by the state to the cultivators. It was the duty of the king to keep agriculturists free from six calamities i.e. fire, flood, epidemic or endemic deseases, famine, pestilance and human agencies[8]. Agriculture was the major industry of the Aryans during the Rāmāyanic age. Along with trade and cattle rearing, agriculture was one of the item to be included in the science of 'Vārtā'[9] - a special branch of learning. Vārtā was also devoted to the systematic knowledge of materialistic interests of the people, their economic welfare and also for the preservation and development of these activities.

Factors Affecting the Agriculture

Agricultural peculiarty of a country is interrelated by various factors, therefore, conformity and disconformity are evinced in agricultural conditions of the different regions. The effect of physical environs are clearly visualized on the factors affecting agricultural conditions during the Rāmāyaṇic age, consequently, the Aryans had considered those areas suitable for cultivation which were fertile. The people of the epic period were well-acquainted with the knowledge of physical factors affecting the agriculture e.g. relief features, soil structure and its fertility and various climatic conditions. The Rāmāyaṇa refers to the possibilities of the better crops due to timely tilling and the availability of adequate rainfall[10]. Similarly, visualising the different aspects of cultural traits, it is evident that the kings were responsible to the welfare of the farmers and advancement of agricultural activities by the administrative policies.

Northern part of India became the core of Aryan settlements during the Rāmāyaṇic age due to the fertility of alluvial soils deposited by the Ganges and its tributaries. An imperceptible slope of land, adequate rains and suitable temperatures made the Ganges valley geographically better suited to agricultural development[11]. Magadha, Kosala and Vatsa[12] janapadas are said to be rich in agricultural products. Thus, it is clear that the people of the epic age were fully aware of the fertility of the soil.

General Land use

A characteristic feature of ancient land policy in India was the division of all available land of a village for different uses. The Rāmāyaṇa mentions the following four types of land uses which in other words imply the types of land based on human use[13]:

(i) Habitation lands which include houses and towns,

(ii) Agricultural lands,

(iii) Pasture lands and

(iv) Forests and uncultivable lands.

The forests in the Rāmāyaṇic age must have been more extensive than they are at present. The pastures must have included large spaces needed for cattle ranches. The Rāmāyaṇa mentions the land which was not under plough as 'Ūṣara' (waste land)[14] and Iriṇa (barren land)[15]. The Aryans knew well that the seed sown in a barren soil is fruitless[16]. The king was supposed to have a detailed knowledge of land, its fertility and its barreness and thus to determine the productive areas more likely to be attacked by the enemies[17]. There are references of white, pale and ochre soils[18].

The Rāmāyaṇa refers to the agricultural villages as 'grāmas', the pastoral villages as 'ghoṣas', the larger provincial towns and the big markets for agricultural produce as 'nagaras' and the smaller mofussil towns dealing as trade centres for the neighbouring villages as 'pattanas'[19]. The villages had their fields on the outskirts. The inhabitants of Ayodhyā had their fields just in the suburbs and the town is

mentioned as full of cultivators[20]. The vicinity of the town must have intensively encouraged the agriculture as the town provided marketing facilities to the farmers to sell the produce of their land[21].

Agricultural Implements

The Vedic literature gives us the picture of well organised rural economy in which agriculture carried on with the plough and bullocks played an important part. The ploughman or cultivator of the soil was called as 'Kīnāśa' or 'Kriṣāṇa' who is today popularly known as 'Kisāna'[22]. There are several references in Vedic literature to various types of ploughs which were drawn by six, eight or even twelve bullocks. Sometimes even twenty four oxen were yoked[23]. Such ploughs, most probably, must have been so effective as a modern tractor for purpose of deep ploughing. Vālmīki has pointed out various implements used in agricultural processes in those days such as Kathinakāja (leather bag), Kalasa (Pitcher), Kuthāra (axe), Kuddāla (spade), Kshurā (knife), Khanitra (spade), Piṭaka (basket), Fāla (the wooden blade of a plough pointed with an iron tip), Lāṅgala (plough) and Hala (plough)[24].

(b) Means of Irrigation

Water is the basic requirement for life. At a very early period, the ancient Indians recognised the paramount importance of irrigation lest the vagaries of nature and uncertainty of rainfall lead to ruining of crops resulting in famine conditions. Irrigation serves a dual purpose in agricultural economy - first

it provides protection to crops against destruction and damage by failure of rain and secondly, it increases the yield of crops.

Indian agriculture has been called a gamble with the rains because of the uncertainty and irregularity of the monsoon. With the failure of the monsoon, there is a lock-out in agricultural industry. The farmers depended mainly on rain for the cultivation in the Rāmāyaṇic age[25] but to overcome the difficulties created by the uncertainty and uneven distribution of rainfall, drought and famine, artificial irrigational facilities were provided to the cultivators by the kings of that age. The rivers, canals, wells, tanks and lakes were the chief sources of irrigation. The canals, wells and tanks were constructed by Yantrakas (engineers)[26]. The northern part of the country during the Rāmāyaṇic age was mainly irrigated by canals and wells while the ponds and lakes were prominent in Peninsular India.

In the Rāmāyaṇic age, there might have been two kinds of crops as in present day - the dry crops depending on rain and the wet crops depending on wide-spread irrigational channels and rivers[27]. The fields of Kosala which were irrigated and did not only depend on rain, were termed as 'Adevamātrika'[28] and wet crops grew well all over the land with the help of the irrigational facilities. The perennial Sarayū must have ensured an unfailing supply of water for irrigation and domestic purposes.

Rivers and Canals

Besides rainfall, the rivers must have been another natural source of irrigation in ancient India as they are today.

Although, the river valley projects like those of the modern days are not indicated clearly in the Rāmāyaṇa, yet the great epic refers to the perennial streams of India on which the dams were constructed for irrigational facilities[29]. The Aryans made no efforts to dam the rivers that were not perennial[30]. The reference in the Rāmāyaṇa that Kārtavīrya Arjuna, the powerful ruler of Māhiṣmatī, blocked the Narmadā river like a dam with his thousand arms[31], confirms the idea of building a dam across the river. Vālmīki has referred to the dams made of sand[32] which were subjected to damage during the rains[33]. The facility of lift irrigation was also practised from the perennial streams during the Rāmāyaṇic age. The description of the charming fields adorned with rows of crops along both sides of the Sumāgadhī (modern Son)[34] proves that these fields were irrigated by the water-lifting machines. Canals were taken out from the rivers and tanks and were termed as 'Kulyā'[35] in the Rāmāyanic age.

The canals were the most important sources of irrigation in the Northern India. Canal network entailed less financial strain on the king and ensured regular supply of water even to the poorest farmer. The following geographical factors were responsible for canal irrigation -

(i) the perennial rivers of the north, with the sources in the perpetual snows of the Himalayas;

(ii) the gradual slope of the plains enabling the canals to be taken out from the upper courses of the rivers easily irrigated the land in their lower valley;

(iii) the absence of rocky ground in the plains facilitated easy cutting of canals and

(iv) the fertile soil which gave the greatest return to irrigation.

It is notable here that the Rāmāyana refers to the northern India as the best agricultural part of the country through which the Gaṅgā flows. Even today the Ganga-Yamuna doab is the most fertile and agriculturally advanced part of the country which must have been so in the Vedic period as well as in the period of the Rāmāyana[36].

Wells and Tanks

Handicaps of agriculture in ancient India were fully recognised and sufficient attempts were made to remove them. Wells, tanks, reservoirs and larger irrigational works were enjoined as a public duty from which no king could obtain exemption. The Rāmāyana mentions the need of wells and tanks in waterless tracts for agricultural purposes[37]. The kingdom of Kosala had not only depended for agricultural products on rain water directly absorbed by the soil but also utilised the rain-water accumulated in numerous tanks. The Rāmāyana indicates that tanks and lakes dominated the southern part of India e.g. Paṁpā, Pañcāpsara and Mataṅga sarasa etc.[38] This confirms that agriculture not merely depended on rainfall but agriculturists used well the provisions of irrigational facilities provided by the kings.

(c) Agricultural Crops

There were two types of crops in the Rāmāyaṇic age i.e. Kriṣṭapacya and Akriṣṭapacya[39]. Kriṣṭapacya were those crops which were cultivated and Akriṣṭapacya included self-growing and ripening crops without tilling the lande.g. Nīvāra, Sānvān etc. Different types of crops and their rotations were known to the Aryans. The food crops mentioned in the Rāmāyaṇa, were paddy, barley and wheat, which are even today regarded as auspicious on ceremonial occasions. Barley and rice have an important place in Hindu rituals and rice and wheat are still the chief food of majority of Indians. Besides, sugarcane and spices were cash crops in the epic age (Fig. 4.1).

Śāli (Paddy)

Paddy became the most important crop in the Rāmāyaṇic age and it was used in various forms by the Aryans. The unhusked grains of rice (akshata) were used in various religious performances[40]. Besides, various forms of rice are also referred in the Rāmāyaṇa e.g. Taṇḍula (the husked rice)[41], Pāyasa (boiled rice with milk and sugar)[42], Lājā (parched rice)[43], Odan or Bhakta (boiled rice)[44] and Kriṣara (a mixed preparation of rice, beans and sesamum)[45] etc.

Śāli was comparatively a larger variety of paddy and was the principal staple crop of kharif season. It was sown in the beginning of the rainy season and harvested in autumn. The autumn rice was called Śāli[46], because it was first sown in small plots away from water. When the plant grew about one to

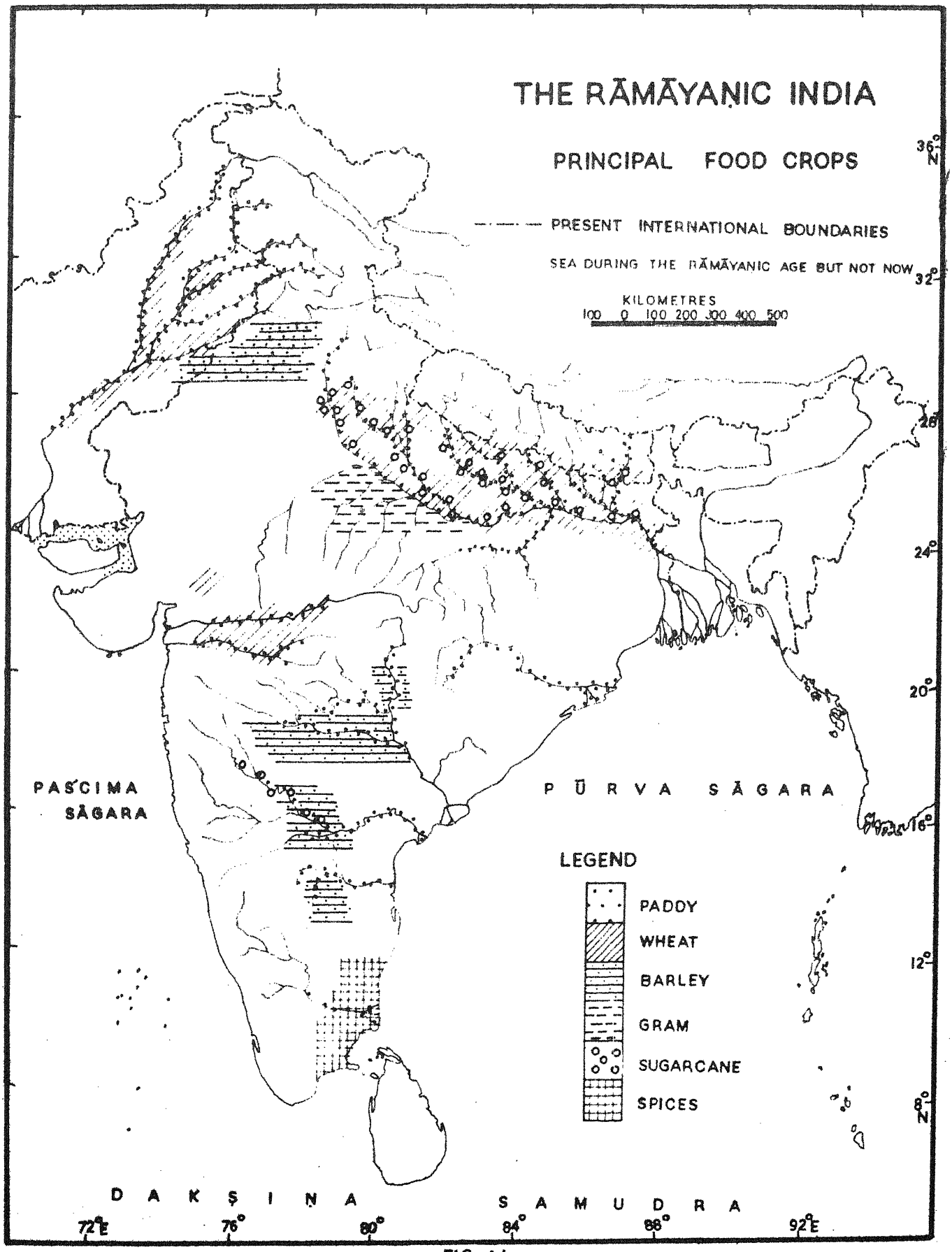
THE RĀMĀYAṆIC INDIA
PRINCIPAL FOOD CROPS
PRESENT INTERNATIONAL BOUNDARIES
SEA DURING THE RĀMĀYANIC AGE BUT NOT NOW
KILOMETRES
100 0 100 200 300 400 500
PAŚCIMA SĀGARA
PŪRVA SĀGARA
DAKṢINA SAMUDRA
LEGEND
PADDY
WHEAT
BARLEY
GRAM
SUGARCANE
SPICES
36° N
32°
28°
24°
20°
16°
12°
8° N
72° E
76°
80°
84°
88°
92° E

FIG. 4.1

two feet, it was transplanted in the water-logged fields in the month of September and harvested in December. The poet in the description of autumn season refers to ripe sprouts in the paddy fields[47]. A paddy field was known as 'Kalamakshetra'[48]. The Rāmāyaṇa clearly mentions that the lands near the banks of the rivers were the main paddy producing areas[49]. Ayodhyā, Kiṣkindhā and Bharadvāja āśrama are mentioned as having abundant supply of paddy and rice[50]. This clearly shows the sufficient production of paddy in the surrounding areas of Ayodhyā, Kiṣkindhā and Bharadvāja āśrama. Thus, we may confer that northern part of the country, especially the plains of the alluvial soil deposited by Gaṅgā and Sindhu and their tributaries, were the main paddy producing areas in the Rāmāyaṇic age. Besides, the coastal region of southern India was also favourable for the cultivation of paddy.

We can suppose that there was no dearth of rains in the plains in the epic age as there is at the present day and the abundance of rains in the plains of northern India in those days was favourable for the cultivation of paddy in the rainy season. The rains as already pointed out, were never regular in coming and the successful cultivation of paddy depended, as still does, on the regularity of these rains. The Aryans, therefore, irrigated their lands by water, diverted from perennial rivers through artificial channels (canals) or lifted from wells by means of stone-wheels (Aśma cakra) to which buckets were attached[51]. This mode of irrigation by water, brought through channels or lifted from wells was, probably, applied in the dry

season, when rainfall sometimes was too scarce and scanty for the cultivation of paddy crops.

In the Rāmāyaṇic age, there were only two kinds of rice i.e. white rice and wild rice (Nīvāra)[52]. Nīvāra appears to be inferior grain and was especially eaten by the ascetics living in the forests.

Yava (Barley)

Barley must have been the staple crop of the Aryans from the very beginning and it is believed that it was one of the principal corn of the world. It is said that it was first produced by the Gods on the fertile banks of the SarasvatI[53]. Saxena is of the opinion that the Indus basin, the SarasvatI valley and partly the Ganga-Yamuna doab were the chief barley producing areas during the Vedic period[54]. According to the Rāmāyaṇa[55], the Ganga-Yamuna doab and PancavatI region were the principal barley producing areas. It was spring-crop sown in autumn season and harvested in spring season. It did not require much rain for its cultivation. A few showers of winter rain were sufficient for it. It was often cultivated under irrigation when rain water was not available at the beginning of the corn formation. New barley grains were offered in the First fruit sacrifice (Āgrāyaṇa)[56]. The principal rite of this ceremony was the offering of the new produce to the gods and the manes, presumably as a mark of gratitude towards them.

Godhūma (Wheat)

It is noteworthy that the word 'godhūma' (wheat) is not mentioned in the Rigveda. Probably, it was neither known nor cultivated during the Rigvedic times and must have been introduced from elsewhere in a later age, for we find it mentioned in the Yajurveda Saṁhitās and the Brāhmaṇas[57]. Wheat did not become an important crop during the epic age but it is evident that it was chiefly rabi crop, sown in autumn season and cultivated mainly in the fertile areas where water supply from irrigation was available[58].

Other Cereals

Among other cereals śhadraka (a special variety of grain), Mudgā (Mūnga-kidney beans), Māṣa (Urda-a bean), Caṇaka (gram), Kulattha (a kind of pulse) and Til[59] (seasamum) were important during the Rāmāyaṇic age. Seasamum was important oilseed, sown with other cereals and was also used in offerings. The above mentioned grains which were cultivated and had natural growth in the forests, were used in the Yajñas.

Cash Crops

Among cash crops, sugarcane and spices[60] were the most important. Sugarcane and its products - guḍa (molasses), sarkarā (sugar) and khāṇḍava (sugarcandy)[61] were extremely popular during the Rāmāyaṇic age. The main areas of its cultivation were the fertile alluvial plains of the northern India[62] because sugarcane grew well in alluvium and light clay and there, the

cane cultivation could be done without the aid of manures. Besides, the plains also provided the ideal climatic conditions for its growth.

Food was dressed with various spices and condiments to increase its flavour and tastes. Generally, seasoning of food[63] by clarified butter, oil and spices was common in the society. We find that the cultivation of spices flourished in the coastal region of India[64]. Dry ginger, cumin and ptychotis ajowan[65] were the main spices of those times.

Cotton (Kārpās) originally belongs to India and from here it dispersed to the several countries of the world[66]. It was the most important commercial crop in ancient India. India was self dependent in raw cotton during the epic period[67] and it was cultivated in Sutlej-Gaṅgā basin and black loamy soils of the Peninsular India, where the climatic conditions were favourable for its cultivation. Besides cotton, silk[68] and hemp[69] were also important fibre crops during the Rāmāyaṇic age.

(d) Natural Calamities

Climate played an important role in affecting the agricultural activities of ancient India. Climatic vagaries have long been a menace to the agricultural development of India. Disability to the economy is caused by famine, droughts, uneven spatial and seasonal distribution of rainfall. The Rāmāyaṇa mentions that the people during the reign of Rāma, were free from famines[70]. There was neither a drought nor famine to be

seen in Ayodhyā in the reign of the king Anaraṇya[71]. The fact that the king was considered to have a clear conception regarding six calamities of agriculture and the methods to counteract them in those days, indicates that famine and flood were not unknown phenomena in the Rāmāyaṇic age.

There are many references to famines having occurred before the reign of Rāma. These famines were produced by drought damaging the agricultural crops. The Rāmāyaṇa refers to that in the reign of Daśaratha, a severe and dire drought occurred in Aṅga territory and it is said that when Ṛiśyaśṛṅga (a Brāhmaṇa well versed in the Vedas) entered the kingdom, the God of rain sent down a shower all of a sudden, bringing great joy to the world[72]. Besides, due to disappearance of Indra, a great drought continued for ten years without break in the past[73] as a consequence of which the world became unproductive, the forests, tanks, lakes and rivers dried up and all living being faded and decayed. The performance of an Aśvamedha restored the prosperity of the earth[74]. From these references it may be pointed out here that the Aryans sincerely believed that it was Indra-worship that gave them regular rains in abundance and made their country immune from the visitations of such dire calamities as famines and droughts. Moreover, the Rāmāyaṇa mentions of crop destruction by hailstones[75]. From the above description, it is evident that the rainfall was sometimes so plentiful as to cause floods and sometimes very meagre, as a result of which agricultural crops were affected adversely.

It is also referred to the Rāmāyaṇa that crops were destroyed by insects. Locusts are said to rush into paddy fields[76]. The king had to guard against the usual damage done to crops by pests and insects.

(e) Social Usage of Agriculture

The economic basis of the Rāmāyaṇic India was principally formed by two component organs i.e. agriculture and stock-raising. The agriculture was regarded a quite honourable pursuit during the epic age. We find in the Rāmāyaṇa that agriculture was not the incompatible occupation of the Vaiśya caste only[77], but it was open to all other castes. There is a reference of a brāhmaṇa named Trijaṭa, residing near Ayodhyā, who is said to earn his living by digging the earth with spades and ploughs and manifestly no stigma is associated with his action[78]. For kshatriyas, agricultural activities were not regarded as disgraceful. Janaka, the king of Mithilā, is described as ploughing the sacrificial field and finding out Sītā while engaged in clearing the weeds and grass of the fields[79]. This indicates the importance of agriculture among the ruling classes. The word Sītā in Sanskrit, originally conveyed the sense of the furrow of a plough share as is clear from its renderings in the Vedas and later Saṁhitās[80]. Thus, agriculture was dignified occupation in the society and was not a concern of less intelligent member of the society but of those youngmen who considered it a grave occupation and knew well the classification of soils and seeds[81].

The Vedic literature presents before us a picture of systematised agricultural operations and agricultural ceremonies, made conspicuous mark in the religious life of the people of that age. Certain religious ceremonies were performed in honour of Sītā, the goddess of agriculture, before the farmers brought their oxen under yoke and started sowing the seed. It was customary to offer sacrifices to the 'kshetrapati' (lord of the field)[82]. Kyrāyana sacrifice[83] was a religious ceremony for partaking in the first fruits of the harvest, in different seasons such as in spring by offering rice and barley, in autumn by rice and millets. The aim of this ceremony was to please deities for averting any harm in eating the new grains or fruits. The farmers of the Rāmāyanic age considered that the deep ploughing with timely and adequate rainfall is a work of religious importance and shall result in the greater possibilities of good harvests[84]. The King had the prerogative to collect 'bali' on the agricultural produce, but the prerogative arose from his sovereignty and not necessarily from his ownership of land[85]. As already pointed out, the Aryans of the epic age had developed devices to avert agricultural misfortunes such as famine, flood etc. by performing sacrifices to Indra, the rain god. The Rāmāyana also marks out the importance of the Sun, as the main source of rains[86].

In this way, these religious activities brought homogeneity not only on micro-regional but also on macro-regional basis as well. These systems penetrated so deeply into the

society that they became traditions among the Indians in the subsequent periods.

(ङ) Agricultural Prosperity

During the reign of Daśaratha and Rāma, the kingdom of Kosala is said to be a most flourishing state full of food-grains[87]. According to the Rāmāyaṇa, the soils of Magadha and Vastsa (the land lying between the Sarayū and Yamunā rivers) Janapadas were very fertile and the whole regions were prosperous from the view point of agricultural produce[88]. Kiṣkindhā and the cities of Kerala, Pāṇḍya and Cola janapadas[89] are said to be full of abundant foodgrains which proves that these janapadas were more productive due to better climatic conditions and fertility of the soil. During the reign of Rāma, the agriculturists kept their fields well ploughed[90] because clouds rained at proper time[91], therefore, the earth was covered with copious crops[92]. The kingdoms were prosperous and happy and the country furnished a plentiful supply of foodstuffs[93]. The art of cultivation during the Rāmāyaṇic age was more advanced than that of the Vedic period. Although, the references to the actual process of cultivation and the crops are scanty in the great epic yet the highly developed culinary art[94] and evidences of that age testify to the cultivation of miscellaneous varieties of foodstuffs. While considering the agricultural prosperity during Vrita's reign, the earth is termed as 'Sarva-kāmadughā'[95], thereby, acknowledging the prosperity of an all round the country through the development of agriculture.

Concludingly, it may be said that during the Rāmāyaṇic age, agriculture was naturally the primary mainstay industry of the country and formed a pivot of the economy. Needs of agriculture were classified and the efforts were made by the administrative machinery to fulfil them. It may be also pointed out that land, the source of all raw materials for industry and still more important for food stuffs, had been carefully considered in its lay-out, utilisation and exploitation. The art of cultivation, division and development of land were largely known to the people of the Rāmāyaṇic age and it seems that the principle of equi-marginal utility or the doctrine of maximum satisfaction was applied to the division and utilisation of land.

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CHAPTER - V

TRANSPORT AND COMMUNICATION

TRANSPORT AND COMMUNICATION

Transport and communication lines are the arteries which provide vitality to the organic growth of a region. They are the basic props of socio-economic development which represents to state of human civilization pertaining to a particular period. The social contacts and exchange of ideas and goods which are intimately associated with human life, are made possible through these lines. In fact, these lines together with the flows over them, hold together the entire spatial organization, the study of which has, of late, emerged as very significant in the discipline of Geography. While making such studies, one has to analyse the net work formed by these lines which exist in varied patterns bearing varied intensities of flow in different geographical regions. In this context, the present day geographer is concerned with the study of railways, highways, waterways, airways and pipe lines as lines of transport and wire and wireless as communication lines which are used through telegraph, radio, television and satellite techniques.

Since the beginning, man has always been endeavouring to solve the problem of transporting load and in this context he used his own body as the first means. In the Rāmāyaṇa too, Rāma is seen employing Hanumāna as his vehicle[1]. Besides, he brought Auṣadhi Parvata from a distant land for revitalising Lakshmaṇa[2]. Hanumāna is less of a God and more of a human being in the Rāmāyaṇa. We can, therefore, deduce that man himself must have been a carrier of his loads in the Rāmāyaṇic age. In

the present study we are, therefore, concerned with the study of means and mode of transport and also the communication lines as developed during the Rāmāyaṇic period.

It appears that the Aryans in ancient India, were conscious of the necessity of the different forms of transport and regarded the maintenance and protection of the public highways as one of the duties of the king of the State[3]. Men travelled from place to place from the days of their earliest existence and land routes were discovered in the course of human migrations. Rivers were also used for the same purposes. We generally find old routes running parallel to the river banks. Probably, people in those days wandered with their cattle in search of food and water along the rivers where they could easily procure these things. With the development of urban civilization, cities grew on river banks and they were linked together with other cities by land, water and air transport.

(a) Means of Transport

On the basis of its mode, transport can be classified into three main categories, as mentioned in the Rāmāyaṇa:

(i) Land transport,

(ii) Water transport and

(iii) Air transport.

(i) Land Transport

The domesticated animals such as camels, horses, oxen, mules, donkies and elephants were used for the purposes of transportation and draft animals[4] in the Rāmāyaṇic period. Probably, the oxen may have been the first beast of burden.

Even today in the villages they are harnessed in the carts and ploughs, but for general movement other animals such as camels and horses have been trained due to their peculiar qualities. Certainly, the spirit and war like bearing of the horse greatly contributed to its early adoption by man for military purposes. During the epic age, regular training was given to the horses and it is clearly indicated that the horses of Vāhlīka, Vanāyu and Kāmboja were of good breed[5]. They were profusely ornamented[6] and were provided with a defensive covering for the chest[7].

In comparison with the horses, other animals utilized for the purpose of transport, had merely local significance. An elephant was a war-machine or the luxurious vehicle[8] of the kings of that age. In the Rāmāyaṇa, there are copious references to show that the elephants were part and parcel of the army in the epic age. There was an independent elephant unit at Ayodhyā and nine thousand elephants are said to have followed Bharata in his march to Citrakūṭa with full military accountrements[9]. Rāma asked Bharata, 'Are the forests which are the home of elephants preserved by you ? And do you not feel satisfied with the number of elephants (owned by You)'[10] ? This refers to the increasing importance of the elephants in that period. It was the duty of the king to see that every day the elephants were provided food and drink. Riding and training up of elephants constituted a part of the military achievements of a prince or warrior. In Laṅkā war Virūpākṣa and other soldiers have been delineated by the great poet as riding over the elephants on the battle-field[11].

The strength of oxen, horses, asses, elephants as well as the wheel had provided Aryans with motive power and equipment for transport on land. As the Rāmāyaṇa provides, we mention an account of various types of vehicles, conveyances and the other means of land (carriage) which were then in use. The vehicles used for carrying men and commodities were termed as Yānas[12].

Types of Vehicles

There were two types of vehicles[13] in the Rāmāyaṇic age: (i) Laghuyāna (small vehicles), (ii) Mahāyāna (big vehicles).

In Laghuyāna we include the Śivikā and Śakata.

Śivikā (Palanquin)[14]. It is grouped in Laghuyāna and was primarily a royal conveyance. This was carried by professional men bearers. It is mentioned in the Rāmāyaṇa that after the defeat of Rāvaṇa, Sita was brought in Śivikā[15]. Palanquins were found in various shapes[16]. The litter or Śivikā was also termed as Yugya[17].

Śakata (Cart). In the Rāmāyaṇa age, carts appear to be the common means of transportation. Oxen and horses were harnessed to draw the carts[18]. These were constructed by carpenters[19]. The carts were made of wood which was abundantly available in the forests. It appears from the study that carts were commonly used by farmers only, while chariots were used by Gods, Kings and dignified persons both for civil and military purposes. In the Rāmāyaṇa it is mentioned that when Viśvāmitra started from Siddhāśrama for Mithilā, he was followed by several hermits with

hundred śakatas[20]. In the epic period some times it was also termed as Goratha[21].

In Mahāyāna we include the different types of Rathas (Chariots) such as Aśvaratha or Hayaratha or Vājiratha[22], Khraratha[23], Ustra ratha[24], Vyāghra ratha, and Gardabha ratha[25] which were termed mainly on the basis of the animal harnessed to the chariot. In the Rāmāyaṇa, references are available to the following parts of the chariot.

1. Aksha[26]. The axle of the car or chariot.
2. Anukarsha[27]. A piece of additional wood fastened beneath the car for the purpose of quickly repairing damages done in battle[28].
3. Apaskara[29]. Any part of carriage, except the wheel as explained by Apte[30].
4. Bandhura[31]. A seat for the warrior[32].
5. Cakra[33]. The wheel of the chariot or car. A chariot furnished with golden wheels[34] is also mentioned in the Rāmāyaṇa.
6. Kūbara[35]. The pole of a carriage to which the yoke is fixed. A kūbara of Cat's eye jewels[36] is mentioned by the poet.
7. Nemi[37]. The rim of the wheel.
8. Nīda[38]. The interior of a carriage where the charioteer stood.
9. Trivenu[39]. It is pole in the front of the chariot to support the yoke.
10. Upastha[40]. 'A secure place'[41]. It was meant for the driver, for Rāma is said to have caused to fall down the charioteer

of Triśirā on his seat in the chariot[42]. Hopkins[43] is of the opinion that the Upastha was the general bottom of the car.

11. Varūtha[44]. A sort of wooden fence or fender with which a chariot is provided as a defence against collision[45].

12. Yuga[46]. The yoke of the chariot or car.

According to shape, different varieties of the chariots are mentioned in the Rāmāyaṇa[47] such as in the shape of mules, cows, camels, dolphins, snakes, alligators, tortoises, fish, birds, Garuḍa, lions, tigers, boars, elephants etc. Dhūmrākṣa (warrior) had a chariot in shape of the heads of a wolf and a lion[48].

According to various sizes and utility the chariots may be grouped into two major divisions:

(i) Yāna Ratha (general chariot) and

(ii) Sāṅgrāmika Ratha (war chariot).

Yāna ratha further may be grouped in the following categories:

(a) Aupavāha ratha[49] (Utility chariot). This was used not only for carrying harvested corn but passengers also.

(b) Mahā ratha[50] (parcel-cum-passenger chariot). It was used to carry attendants, passengers as well as supplies. It was a huge and spacious chariot.

(c) Puṣpa ratha[51]. It was a decorated chariot specially used in marriage ceremony, festival and public gatherings and for royal movement.

(d) Kāmaga ratha[52]. It was a fast-moving chariot specially used by the kings.

(e) Brahma ratha[53]. It was used for conveyance by the brāhmaṇas.

(ii) Sāṅgrāmika ratha - A war chariot was called Sāṅgrāmika ratha and was distinguished from other varieties of chariots[54]. The main qualities of a war chariot were its strength and spaciousness. The chariot of a Knight was crowded with quivers, arrows, spears, swords and clubs studded or tipped with iron[55]. Atikāya's chariot, drawn by a thousand horses and driven by four charioteers, carried twenty quivers, ten dreadful bows and eight bow strings and he was in the midst of whetted pikes, very sharp and flaming spears, lances, javelins and śaktis placed in his chariot. Bows with golden backs ranged on every side in his chariot. Hanging on its sides, two flaming swords clearly ten cubits long and provided with hilts measuring four cubits were found casting their splendour on his two sides[56].

Weapons were arranged in the war chariot in an orderly manner so that the Knight may be skilful to speedily lay his hands upon the thing required. It appears, there was a proper place for each kind of weapons. 'The swords', it is said about Atikāya's chariot, 'were placed in the sides'[57] and in Aksha's chariot, the śakti and tomara had been placed in their respective order[58].

In the Rāmāyaṇic age the chariot of a knight was prodigally decorated. It was richly laid in gold and precious stones[59]; had gold bells echoing sweet tinkle[60] and an umbrella

of one hundred gold ribs and a gold pole[61]. The chariots also had a pennon in its top which was perhaps the emblem of the Knight[62].

Usually four horses were harnessed to the war chariot[63] but occasionally chariots were driven by eight horses too[64]. Aksha marched against Hanumāna, mounted on the chariot in which eight swift and excellent horses were yoked[65]. Rāvana in the war time ascended on the swift going formidable chariot, having eight horses yoked to it[66]. The horses were decked with gold ornaments and white whisks in the epic period[67]. The horses and mules of the chariot were controlled by the charioteer by means of the reins and the whip[68], and they were also supplied with protective coverings[69] (beast plates) made of gold. Besides, the Rākshasas also harnessed the Kharas (mules) to their chariots. It is said that Rāvana had a chariot in which thousand mules were yoked at a time[70]. Specifically, four sharp teethed tigers are said to have been yoked to his chariot by Indrajīta[71].

Speed was the chief demand of a chariot soldier and naturally this depended upon the excellent quality of the horses[72]. It is clearly indicated in the Rāmāyana that the horses of Vāhlīka, Vanāyu and Kāmboja were of good breed[73]. Horses were trained in turning (quickly) to the right and left and were capable of enduring the burden of the heavy loads[74]. It is evident that during the Rāmāyanic age the horses were regularly trained for the skilful movement.

It shall not be out of place to mention here of the chariots obtained by 'long continued asceticism' or 'as a result

of offerings properly made into fire'. Prince Aksha is said to have "sallied out ascending a car, obtained with long continued asceticism, embellished with a net of glowing gold, furnished with pennons; having a standard studded with gems, nicely yoked with eight excellent steeds having the fleetness of thought, incapable of being overpowered either by celestials or Asuras, competent to course over uneven ground having the lustre of lightning, sky ranging, completely garnished, equipped with quivers, with swords fastened to the banners in eight directions, with darts and lances arranged in proper places, splendid with every object in full measure; bearing golden threads, wearing the brilliancy of the sun and moon, and possessing the effulgence of the sun"[75]. Indrajīta having offered oblations to the fire and gratified the gods, ascended an excellent and splendid chariot capable of going out of sight during the war. This chariot was drawn by four very strong and inviolable horses and was furnished with all decorations and arms[76]. Such chariots might either be ascribed to the māyā of the Rākshasas or might ~~might~~ reflect the aspiration of a chariot warrior.

Roads

Roads as a means of transport arrogate vital importance in entire process of growth. The use of carriage gradually brought about construction of roads on a level surface. Ancient Indian planners fully realised the importance of roads for the progress and security of the State. Recent archaeological discoveries have divulged that the people in pre-historic times were fully aware of the importance of roads.

In the Rāmāyaṇic age when the whole country was divided into many Janapadas, no big roads running throughout the length and breadth of the country could have been in existence, however, we find that routes were connected from state to state. From the study of the Rāmāyaṇa, we can casually understand that Ayodhyā[77], the capital of the Kosaladesha, was connected by roads with the Aṅgadeśa, Mithilā, Girivraja, Śriṅgaberpura and Mathurā and these roads were maintained in fairly good condition so as to make possible a chariot-ride. In the description of the towns such as Ayodhyā and Laṅkā, we are told that the rājmārgas (state highways) were daily cleaned and sprinkled with scented water[78] and were provided with lamp posts[79].

The Rāmāyaṇa reveals that means of transport in those days were in a quite developed stage. There were five types of roads - vīthī (lanes)[80], rathyā (streets)[81], uprathyā (by-streets)[82], mahāpatha (roads)[83] and rājmārga (national highways)[84]. They were classified according to use and destination. For example, rathyā means the road in which chariot may run easily In the towns, capitals and forts, there were roads for chariots, roads for beast of burden and for general traffic. The cities, besides having the main roads, carts and cattle-tracks and foot-paths, also had roads leading to the villages[85].

In the Rāmāyaṇic age probably roads were maintained by signs, milestones, cross roads and curvings. The street thronged with edifices[86], squares (catuṣka)[87], crossings (catuṣpatha)[88], and quadrangles (śriṅgāṭaka and catvara)[89] were maintained under

the traffic regulation. At crossings daisies were planted[90]. There were rows of white mansions resembling autumnal clouds, having golden pillars and net work[91].

The classification above shows that town-planners of the Rāmāyaṇic age had an idea of the importance of the street planning but we have no direct informations to hand about the alignment of roads and their widths. It was the duty of the king to construct the roads according to the requirements of the city or villages. It is evident that streets and roads of the epic age were arranged and planted according to rectangular chess-board (catuspatha or catvara) of street planning[92]. The rectangular street planning of the ancient Indian times holds recognition and validity today also because the rectangle is the most convenient for block building.

Roadways Engineering

The roadways engineer or civil engineer is mentioned in the Rāmāyaṇa. In the epic age he was designated as Shilpī[93] or Mārgaśodhaka[94]. Bharata[95] ordered the Shilpīs to prepare new road for the forest and they leveled the uneven paths and cleared forests to make new roads. It was also the duty of the engineer to construct the bridge over the streams and to level up the low lying lands[96]. Surveyors were termed as Sūtrakarma-viśārada[97]. Stone chips were used to metal the road. It appears that there was a specific department, akin to modern P.W.D. having skilled-men, Mārgaśodhaka, Sūtrakarma-viśārada and several others and also having various implements required in road construction.

The department also had the services of Bhūmipradeśajña, Khanaka, Yantraka, Sthāpati and Yantrakovida[98] who had a fair knowledge of soil and nature of the land. Such an expert knowledge was also utilized in the construction of bridges. In Laṅkā, there were four extensive draw-bridges across the moats, which were equipped with numerous engines[99].

The most striking point in support of the efficient skill of the Civil Engineering department of those days, was the construction of the bridge across the ocean to Laṅkā[100]. It indicates that even in those days there was an engineering branch in the army to examine the routes for their easy movement. Nīla is described as the commanding head of the engineering branch of the army and Nala the superintending engineer[101]. Nala started to plan the construction of the bridge (Mahāsetu)[102] of hundred yojans in length. Mechanical instruments or cranes[103] were used for uprooting and transporting the unwanted trees and boulders to the seashore. The artisan took the plumb line (Sūtra)[104] and measuring rod (daṇḍa)[105] to lay out the rocks in a straight line so that the bridge should not bend and they undertook the bridge to build with almost responsibility and skill. This makes clear that cartography and surveying had reached a high standard of dexterity in those days.

From the study of the Rāmāyaṇa, it is evident that people were fully competent to construct well-developed highways. Their knowledge of town planning and architecture yielded a regular service for transportation of goods, both inland and abroad.

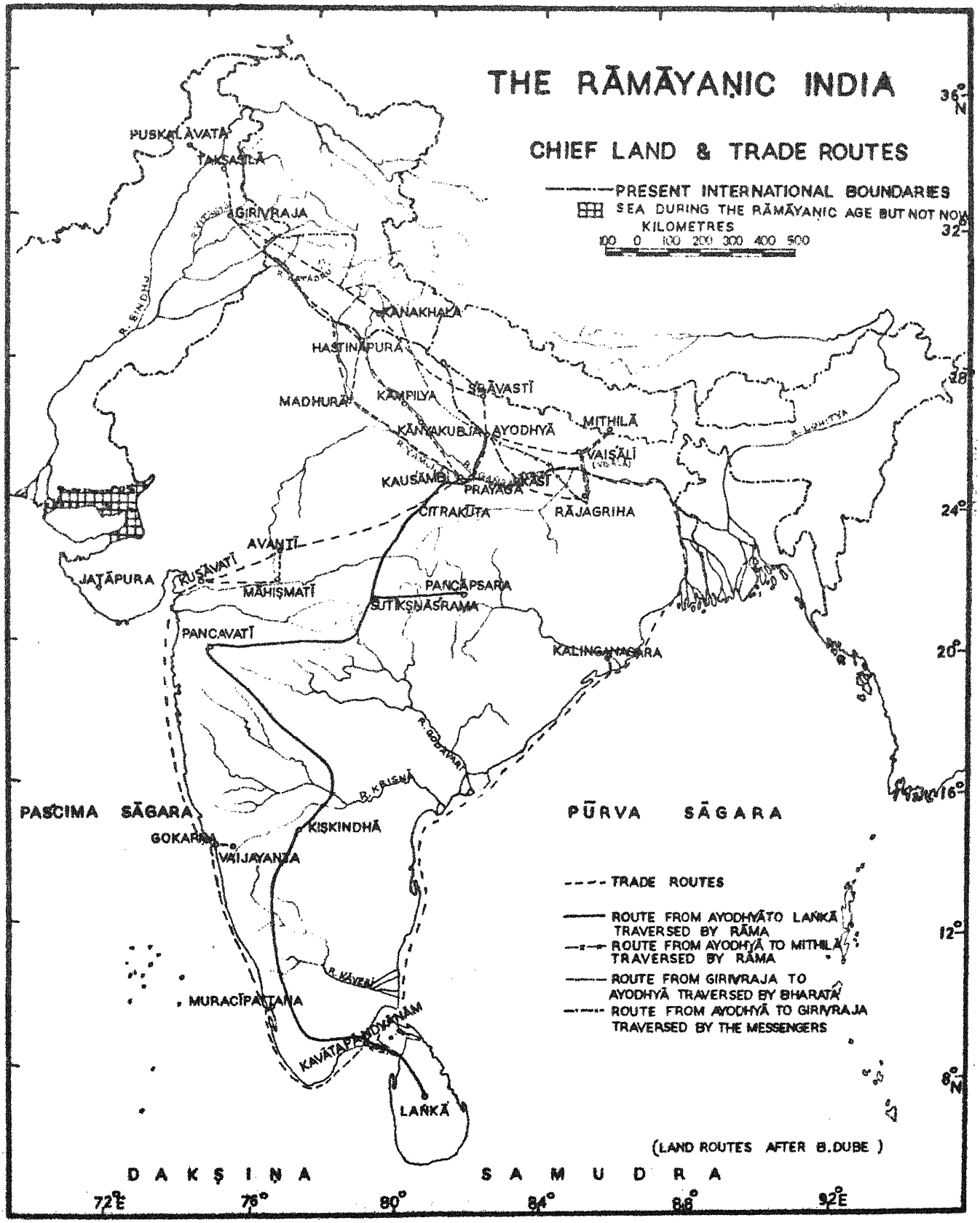
THE RĀMĀYAṆIC INDIA
CHIEF LAND & TRADE ROUTES
PRESENT INTERNATIONAL BOUNDARIES
SEA DURING THE RĀMĀYAṆIC AGE BUT NOT NOW
KILOMETRES
100 0 100 200 300 400 500
PUSKALĀVATA
TAKSAŚILĀ
GIRIVRAJA
R. SINDHU
KANAKHALA
HASTINĀPURĀ
MADHURĀ
KAMPILYA
ŚRĀVASTĪ
KĀNYAKUBJA
AYODHYĀ
MITHILĀ
VAIŚĀLĪ
R. GHAGHRA
KAUSĀMBĪ
PRAYĀGA
VĀRĀṆASĪ
CITRAKŪṬA
RĀJAGRIHA
AVANTĪ
JAṬĀPURA
R. CARMAṆVATĪ
MĀHIṢMATĪ
PAÑCĀPSARA
SUTĪKṢṆĀŚRAMA
PAÑCAVAṬĪ
KALIṄGANAGARA
R. GODĀVARĪ
R. KṚṢṆĀ
PAŚCIMA SĀGARA
PŪRVA SĀGARA
GOKARṆA
KIṢKINDHĀ
VAIJAYANTA
TRADE ROUTES
ROUTE FROM AYODHYĀ TO LAṄKĀ TRAVERSED BY RĀMA
ROUTE FROM AYODHYĀ TO MITHILĀ TRAVERSED BY RĀMA
ROUTE FROM GIRIVRAJA TO AYODHYĀ TRAVERSED BY BHARATA
ROUTE FROM AYODHYĀ TO GIRIVRAJA TRAVERSED BY THE MESSENGERS
R. KĀVERĪ
MURACĪPAṬṬAṆA
KAVĀṬAPURAM
LAṄKĀ
(LAND ROUTES AFTER B. DUBE)
DAKṢIṆA SAMUDRA
72°E
76°
80°
84°
88°
92°E
36° N
32°
28°
24°
20°
16°
12°
8° N

FIG.5.1

Chief Land Routes

Of the several land routes mentioned in the Rāmāyaṇa, we mention below the following land routes chiefly traversed by various parties and kings (Fig. 5.1).

1. Route from Ayodhyā to Aṅgadeśa traversed by Daśaratha.
2. Route from Ayodhyā to Mithilā (Janakapura) followed by Ṛiṣi Viśvāmitra accompanied by Rāma and Lakshamaṇa.
3. Route from Ayodhyā to Mithilā journeyed by Daśaratha.
4. Route from Ayodhyā to Kekaya.
   This route can be divided into two branches:
   (a) Traversed by Messangers, and
   (b) Traversed by Bharata.
5. Route from Ayodhyā to Laṅkā.
   This route can be divided into two parts:
   (a) From Ayodhyā to Pancavaṭī, and
   (b) From Pancavaṭī to Laṅkā.
6. Route from Ayodhyā to Vālmīki āśrama.
7. Śatrughna's expedition against Lavaṇa from Ayodhyā to Madhubana (Madhupurī).
8. Routes from Praśravaṇa Giri to northern, western, eastern and southern world traversed by search party of Sugrīva.
9. Route from Ayodhyā to Citrakūṭa journeyed by Bharata.
10. Route from Ayodhyā to Gandharva nagara traversed by Bharata.

(ii) Water Transport

Civilization saw its beginning in the lap of the river basins which provided not only fish as food but also provided

to walk. The waves and ripples made the human life more adventuresome. Fallen tree trunks in the river were the guide lines of the primitive men for water transportation. They then used floating boats with the help of long poles in the direction, they desired to move.

Man had conquered water at a much earlier date than has been supposed hitherto. Transportation by water is so cheap that it carries a vast volume of trade since river or ocean is a readymade highway with least resistance and unencumbered with the cost of construction, maintenance and supervision. Moreover, water routes require less human labour and the given load requires few men. So, it is clear that before an organised system of roads, the waterways must have been the earliest means of passage and transport and the chief line of transport between different settlements.

The great land mass of the Indian sub-continent is sea-girt on the east, west and south and has a large number of harbours situated all along its 5700 Km long serrated coast line. Mostly it is believed that the inhabitants of India lived in isolation and were unacquainted with sea voyages. But a careful search into the Vedas, confirms that the Aryans went into the open sea boldly[106]. The recent archaeological discoveries have also brought to light the actual remains of brick-built docks, wharfs, jetties (landing plateforms) and warehouses ranging in date from 2300 B.C. to 300 A.D. These structural remains bear ample testimony to the skill of Indian sea-men and engineers in building ships and docks and corroborate tradition and literary evidence[107].

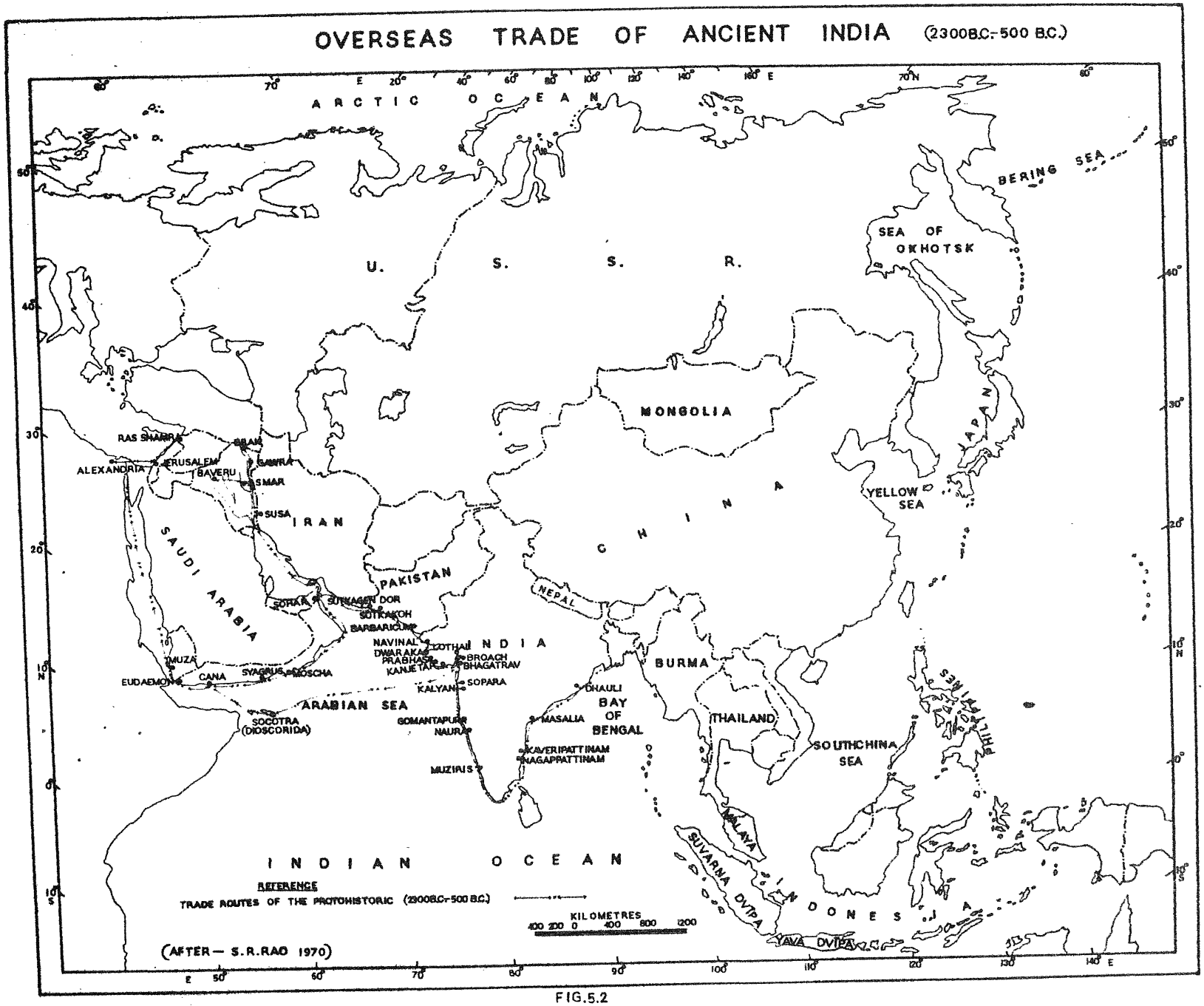
OVERSEAS TRADE OF ANCIENT INDIA (2300B.C.-500 B.C.)
ARCTIC OCEAN
U. S. S. R.
BERING SEA
SEA OF OKHOTSK
MONGOLIA
JAPAN
CHINA
YELLOW SEA
IRAN
SAUDI ARABIA
PAKISTAN
NEPAL
INDIA
BURMA
THAILAND
SOUTH CHINA SEA
PHILIPPINES
INDONESIA
ARABIAN SEA
BAY OF BENGAL
INDIAN OCEAN
RAS SHARRA
ACRE
JERUSALEM
ALEXANDRIA
BAVERU
GERRA
SMAR
SUSA
SOHAR
SUTKAGEN DOR
SUTKAKOH
BARBARICUM
NAVINAL
DWARAKA
PRABHASA
LOTHAL
BROACH
BHAGATRAV
KANJETAR
KALYAN
SOPARA
DHAULI
MASALIA
SOMANTAPURA
NAURAS
MUZIRIS
KAVERIPATTINAM
NAGAPPATTINAM
MUZA
EUDAEMON
CANA
SYAGRUS
MOSCHA
SOCOTRA (DIOSCORIDA)
MALAYA
SUVARNA DVIPA
YAVA DVIPA
REFERENCE
TRADE ROUTES OF THE PROTOHISTORIC (2300B.C.-500 B.C.)
KILOMETRES
400 200 0 400 800 1200
(AFTER — S.R.RAO 1970)

FIG.5.2

India's Maritime Relations with Different Countries of the World

The Arabian sea, Ratnākara of the ancient Indians, played a prominent part to connect India with the western countries[108]. Mrs. Rhys Davids writes, 'the early commerce between India and Babylon was largely via the Persian Gulf'. Rome and Egypt were linked with India through the Red Sea[109]. Indian teak wood is believed to have been found in the Babylonian remains of the third millennium B.C. In the Vedic age west Asian countries were culturally a part of India. The Boghaz Koi (Iran) inscription of the 14th Century B.C., is a remarkable evidence of a very close cultural contact between India and Western Asia[110] (Fig. 5.2).

India's maritime trade with East and South-East Asia also started in very early times, i.e. first millenniun B.C. Very important evidence proving contact by sea was brought to light through the archaeological discoveries by Prof. Beyer mostly in the province of Rizal in the Phillipines during 1926-30[111].

The Rāmāyaṇa had a number of versions not only in India but also outside the country's frontiers. The Aryans sailed to the South-East Asian countries not only in search of new markets but also for spreading culture. These immigrants continued to have faith in their epics, we see the Rāmāyaṇa scenes nicely carved on the Śaiva temples in Java and Combodia[112].

Very little is known of India's contacts with Africa in ancient time. This does not mean that the contacts did not

exist. As mentioned above, the Indian Ocean, from the remote past, has been the hub of sea-faring activities. According to Kashinath Vaman Lele, there are references in Indian literature which show the knowledge of Africa in Vedic and post-Vedic times and, probably, the existence of a close link between India and Southern Rhodesia. He mentions that in the 'Aitreya Brāhmana', there are references to Masnār (मष्णार) or Mashanaland in the context of its gold and elephants[113]. He further mentions that there is a reference to the Jhalls (झल्ल) in the 'Bhavisya Purāna', alony their physical characteristics. This tallies very much with the physical characteristics of the 'Zulus' of Africa[114]. Sharma[115] is of the opinion that Egypt means, the mixture of the races of Aryans, so it became Egypt (मिश्र).

The arrival of Columbus in 1492 A.D. on West Indies neither created a new world nor discovered one. Many centuries earlier, Aryans had gone there across the Bering Strait. Robert Heine - Geldern and Gordon F. Ekholm are of the opinion that Indian and South-East-Asian culture influenced ancient America through human migrations across the Pacific[116]. According to Singhal, man first came to America from Asia towards the end of last glacial period between 20,000 and 10,000 years ago across the Bering Strait. He has also suggested that there may be a route from Aleutian islands[117]. It is believed that ancient Indian adventurers and merchants were attracted to America due to precious metals, stones, gold and pearls for which a great demand had grown up in the centre of ancient civilizations. The Rāmāyana also furnishes the focus on it when Sugrīva ordered his

commanding general and thousand warriors to search out Sītā in the east. In his instructions to them he has mentioned several places and seas, giving an idea of the geography of America[118].

Thus, we can safely conclude that there were trade relations between India and various countries of different continents. The Vedic literature proves the early existence of complete navigation of the Indian Ocean and of the trading voyages of the Aryans.

Navigation in the Rāmāyaṇic Age

The Rāmāyaṇa throws ample light on the navigation. It says 'the rivers empty themselves in the ocean which is the lord of water[119]. H. Jacobi[120] adduces argument to prove that the Rāmāyaṇa does not reveal the knowledge of Sea Voyage. According to him, only boat and river navigation were known to the people in the Rāmāyaṇic age. But Tripathi[121] explains 'Mahānauriva Sāgare'[122] or Sāmudrāḥ[123] (ocean traders) in this connection to prove Sea Voyage. Mahānau (महानौ) clearly implies a sea going ship (a very big boat). According to him it is further corroborated by the following arguments[124].

(i) Dr. Bulher is of the opinion that there were maritime activities between India and Mesopotamia in 8th Century B.C.

(ii) Dr. A.S. Altekar evinced clearly from the Baudhāyana Smriti (5th Century B.C.), Sussondijātaka and Suppārak jātaka that India had ocean-borne trade in eastern and western directions circa 8th century B.C.

(iii) In the time of Kautilya (4th century B.C.), ocean navigation and coastal shipping both were quite satisfactorily developed.

(iv) The Rāmāyaṇa mentions Yavanas[125] and it clearly inuicates that the Indians had direct contact with them through ocean. In this connection, we must remember that Alexander the Great returned from India by an ocean route[126].

(v) Mention of the Yavadvīpa[127] in the Rāmāyaṇa proves the trade connection by ocean.

(vi) India had direct maritime contact with Egypt in the 2nd century B.C.

(vii) Dr. Van Der Slean, Director, Royal Anthropoligical Institute, Holland, has proved that Circa 2000 years ago Indians went to the coast of Africa (Zanzibar) and traded there with glass beads made in Brahmapura (modern Hapur), U.P.

(viii) Ashoka's rock edict XIII indicates that the great kings had foreign trade relations.

We frequently find references to merchants, merchandise and markets[128]. The Rāmāyaṇa also mentions the travelling companies of merchants (वणिजो दूरगामिनः)[129] and large boats laden with vendibles[130] which indicate the presence of foreign trade. In the epic we come across a description allusively to merchants on a voyage for trading purposes but who were overtaken by a storm or a whirl wind in mid-ocean[131].

The Rāmāyaṇa[132] further displays that the internal navigation was in a quite developed stage. The big rivers of India are mostly navigable and so local trade must have been carried through them. The Rāmāyaṇa furnishes many instances. Rāma, when banished to the forest by his father, crossed the Gaṅgā in a boat and met Bharadwāja for necessary guidance[133]. Viśvāmitra accompanied by Rāma and Lakshmaṇa, started from Ayodhyā to Janakapura and crossed the river Gaṅgā by boat[134]. Bharata and his followers were ferried across the Gaṅgā by the fishermen[135]. Sugrīva directed his monkey leaders to go to the different islands by boats and search Sītā in there cities and mountains[136]. The large boats of the epic age were provided with automatic machinery and all kind of weapons of war[137]. The boats were distinguished by flags and had large bells[138]. The cabin of the boat was decorated with white rugs and distinguished by the sound of festal music[139].

The Rāmāyaṇa mentions Nau[140], Nāva[141] and Plava[142]. Nau stands for simple boat for crossing rivers where as Nāva stands for big boats or ships. Nau was simple in construction and pliable only by oars. Probably, the people of the Rāmāyaṇic age also used large ships to cross ocean and sea. Another type of boat was called Plava which was perhaps a war ship or only bark or raft to cross the river. Pota[143] was perhaps termed for fleet. Svastika[144] was royal boat (excellent boat bearing the mark of Svastika) and it was manned by trustworthy sailors. It had to be tagged on to another boat evidently for the safety of the king. As the boats were meant to carry a huge host of

soldiers, men and women, animals, chariots and bullock carts, they would have been very large and capacious like ships[145]. Fighting boats are also mentioned in the Rāmāyaṇa[146].

Ship Building

The mechanical science of ship building was skilfully done in ancient times. The ship builders had a good knowledge of materials as well as the varieties and properties of wood. Teak was used for this purpose at Lothal in 2200 B.C. According to Ramesh Rao and others, teak grew in abundance in the Panchmahals of Gujarat in the Proto-historic period. Besides, other varieties were imported from the west coastal ports of the south India[147]. Literature concerning ship building, their size and shape in the Rāmāyaṇic age is significantly lacking but the epic alludes that the qualities of wood were investigated, technicalities of construction were perfected[148] and it may be allusively said that this art was studied as a separate branch of science.

Lastly a string of nautical terms support the developed science of ship building and navigation.

(i) Aritram (Oar) - In the Rāmāyaṇa it is called Sphyā[149]. It means boats or ships propelled by oars.

(ii) Karṇa[150] - The helm or a rudder of a ship.

(iii) Karṇagrāha[151] - Driver.

(iv) Karṇadhāra[152] - Head pilot - helmsman who operated the rudder and steered the boat.

(v) Nāvika[153] - Oarman or an ordinary sailor.

(vi) Dāśa[154] - Boatman - the other staff of the boats.

(vii) Kaivarta[155] - A fisherman who was navigator in the river.

The Harbours (Pattanas)[156] of the Rāmāyaṇic Age

The necessity of trade led to the growth of many commercial towns and sea ports in India. According to Mayamata, 'a pattana is a town abounding in articles imported from other islands, alive with all classes of people, a land of commercial transactions in the shape of sale and purchase .....situated in the vicinity of a seacoast, lying lengthwise along it'[157]. In the epic period, the harbours were also termed as Thīrthas[158].

India's great rivers such as a Indus, Ganges, Yamuna, Brahmaputra and Narmada are navigable throughout the year. The trade centres on the bank of the different rivers had direct water route for south-east Asia, East Asia, Middle East and other countries on seashore. The main trade centres of the Rāmāyaṇic period situated along the river banks were, Ayodhyā, Kanakhala, Hastināpura, Kāmpilya, Kauśāmbi[159], Madhurā or Madhupura or Madhupurī[160], Māhiṣmatī, Prāgbaṭanagara, Pratiṣṭhānanagara, Saṅkāśya, Vārāṇasī and Viśālā[161].

West Coast Ports

Lothal was the most important port city synchronising with Harappa and Mohenjo-daro of the golden days. After the fall of the Lothal (1900 B.C.), Kuśāvatī[162], the capital of Kuśa, son of Rāma, probably had her trade contacts with Egypt and Middle East sea ports in the epic age. According to the description of the Rāmāyaṇa, Dey[163] has identified Kuśāvatī with

modern Dabhoi, 38 miles north-east of Broach in Gujarat. In the Rāmāyaṇa, Sugrīva is described as having sent armies to the four quarters of the globe in quest of Sītā. He has mentioned several places of the Western India such as Saurāṣṭra, Candracitra and Vāhlīka[164] together with the entire tract of land along the western ghats. Besides, at the time of sacrifice performed by Daśaratha, the kings of Saurāṣṭra, Sauvīra and Sindhu[165] were also invited.

Cunningham[166] has identified Sauvīra with Vadari or Eder in South-West Rajputana at the head of the gulf of Cambay, the Ophir or Sophir of the Bible. It was the main trading centre during 1015 B.C.

Murachīpattana[167], Gokarṇa[168] and Vaijayanta[169] are also mentioned in the Rāmāyaṇa. They were the important trading posts in the western coast. Murachīpattana (Mouziris of the Greeks) is Muziris or modern Cranganur[170] sea-side town 32 Km north of Cochin. Exports from here comprised of pepper from the neighbouring area, fine pearls, silk, transparent stones, sapphires and tortoise shells etc. Muziris imported coins in great quantity, topaz, antimony, coral, crude glass, copper, tin, lead, a little wine and wheat according to the requirements of the sailors[171].

Gokarṇa is identified with modern Gendia[172] or Gokarn, a town in North Kanara (Karnataka State) District, 30 miles from Goa and contains the temple of Mahādeo Mahāvaleśvara established by Rāvaṇa. Kālidāsa also mentions Gokarṇa as a place of

pilgrimage in South India[173]. Gokarṇa had a longer history and must have been a trade centre in the epic age for mineral products of Deccan plateau and the forest products of the Western Ghats. Vaijayanta or Vaijayantī has been identified[174] with modern Banavasi and it was also the commercial port in the Rāmāyaṇic age. It was the great capital of Kadambas and one of the wealthiest cities of India in the time of Ashoka.

East Coast Ports

So far as the east coast is concerned, we have much reliable evidence in the Rāmāyaṇa but the poet has mentioned only the Janapadas of the southern and eastern India[175] i.e. Mekhala, Utkala, Daśārṇa, Vaṅga, Kaliṅga, Kaushika, Āndhra, Puṇdra, Cola, Pāṇḍya and Kerala. In contrast to the west coast there was naturally restricted development of large harbours in the east coast. Besides, the inhabitants of the east coast region had vigorously participated in the over seas trade, particularly in South-East Asian realm and had succeeded in putting the stamp of Indian culture on far-off lands.

Two ports in the east coast which are significant from the commercial point of view during the epic age, were Daśārṇa and Kabāṭapāṇḍyānām[176] mentioned in the Rāmāyaṇa. Daśārṇa was a territory to the south-east of Madhyadeśa in the Rāmāyaṇic age and it was connected with Mekhalas and Utkalas where Sugrīva sent his army in search of Sītā. The Purāṇas[177] also associate the people of Daśārṇa country with the Mālavas, Kārūṣas, Mekalas, Utkalas and Niṣādas. According to Periplus[178] (Dosarene) it was

the region east of Masalia (i.e. the country around Masulipatam in Andhra). According to Sircar[179], Dosarna (Of Ptolemy) is a modification of the Indian name Tosala (the same as Tosali or Tosala) identified with modern Dhauli in Puri district.

Kabāṭapāṇḍyānām clearly shows the gateway of the Pāṇḍya territory. Kabāṭa must undoubtedly refer to a town or a locality in Pāṇḍya country. Kabāṭapuram or Pāṇḍya-Kabāṭam is mentioned in the Arthaśāstra[180], as a place where pearls can be obtained which clearly points out that it was definitely on the sea-shore. Thus, it may be identified with Colchi (Of the Periplus) or Kolkai or Korkei. Kolkai derived its name from Tamil rest Kol - to pay and became an important emporium of the time. Colchi is noted for its pearls. (Fig. 5.3).

Apart, the poet has also mentioned the South-East Asian Countries such as Yava (Java), the islands of Suvarṇa and Rūpyaka (East Indies Archipelago) and so many countries and seas of the East Asia[181]. This clearly indicates the quite accurate knowledge of sea-faring activities of the Aryans. Not only this, the poet has also mentioned a port of the Middle East. According to a legend of the Rāmāyaṇa, Varuṇa, who was supposed to be the regent (digpāl) of the western world and also lord of the oceans and rivers, built a city called Aśmanagara, which is identified with modern Smyrna or Izmir along the western coast of Turkey[182] and has been a great port of call from times immemorial.

From this it can be easily inferred that the epic provides information about quite developed stage of sea-faring and maritime

activities. The people of the Rāmāyaṇic age acquired the knowledge of the science and art of navigation through theoretical and practical trainings.

(iii) Air Transport

Air transport which has the advantage of fast speed both over land and sea, has acquired great importance specially in the 20th century. Though different forms of transport are parts of an integral system which has developed gradually, yet air transport has a special role to play in the globe from earliest times todate. Scientists of U.S.A. and Soviet Union have successfully planned inter-planetary flights to Mars and Venus in last decade and scientific knowledge has made it possible for people to fly to the moon and Mars. But air transport can not be regarded as a phenomenon of the modern times alone. The acme of the Vedas is proved even in this sphere and several hymns of the Rigveda give fullest indication of the development of the means and methods of air transport in ancient India. The Aryans have developed the technique and desirability of the Vimāna in the Vedic period. In Sanskrit 'विः' means 'the bird' and 'मान' means 'likeness' or 'resemblance'. So Vimāna means like a bird which may freely move in the sky. There is a reference in the Rigveda[183] that Indra had a vimāna of horse shaped named Hari, so Indra is called 'Haryaśva' or Harivāhana. Bṛhaspati had also a vimāna of cow shaped termed as Viśvarūpa[184]. There are direct references about vimānas and their types in the Rigveda[185] which clearly indicate the knowledge about air transport and fast speed of vimānas in high sky.

The Rāmāyaṇa indicates that air transport was well-known in those days, though there is no detailed description of the development of air routes in the country. The Rāmāyaṇa[186] mentions the vāyumārga and vāyupatha clearly which are related to Air transport.

Puṣpaka vimāna was too well-known in the epic age. Hanumāna, dūta of Rāma, crossed the ocean by his plane which was charming and adorned with designs of lions, elephants, tigers, birds and serpents[187]. Reaching Laṅkā in the palace of Rāvana, Hanumāna saw a beautifully made aerial car full of splendour, swan shaped and was decked with numerous precious stones, bearing the name of Puṣpaka, derived from the word 'Puṣpa' (a flower), capable of travelling long distances, enjoying an exalted rank among the foremost of aerial cars. Birds made of cat's-eye gems, fashioned of silver and corals, lovely serpents made of various jewels figured there. In Puṣpaka elephants with shapely trunks and covered with philaments (of lotuses) were engaged in offering worship to Goddess Lakṣmī with lotus-petals held in their trunks and an image of Lakṣmī too had been fashioned with graceful hands and holding a lotus in Her hand[188]. The Puṣpaka was rendered picturesque by gems and jewels and distinguished by the structure of lattice windows of highly refined gold and made by Viśvakarmā himself according to specific models which moved swiftly as the wind and following the mind of its master[189]. On the basis of above description it can be remarked that people of the Rāmāyaṇic age knew the techniques of construction of different types of the vimānas.

Types of Planes

According to utility, the poet has classified the planes into two groups, i.e. Hamsākāra and Nagarākāra.

(i) Hamsākāra[190] - It was a swan-like plane used specially by Kings, Devas and semi-divine races. Puspaka was provided with the image of swan.

(ii) Nagarākāra[191] - It was a big plane used by celestial Risis, Gandharvas, Yaksas.

Besides these, Śri Pal Singh[192], in an essay has clearly mentioned that Sampāti was not a vulture but a Tripura Vimāna of superior quality which was capable to run in the sky, water and land and possessed high velocity war apparatus of excellent quality. He has further explained that mainly due to its Sampāti type of flight, it was termed as Sampāti. The Rāmāyana[193] mentions Sampāti as a vulture who travelled from the earth to the sun. In fact, a vulture can fly from an island to another island but not from a planet to another planet. Probably, it was used for space research and was launched from Kailāsa mountain. Speedily rising above when it reached below the path of the Sun, its wings were badly burnt due to the heat of the sun and consequently it fell down on the Vindhyan ranges. This means that greater care had been taken in selecting and deploying the planes for space research targets.

Air Routes - In the field of national and international air routes, India had made good progress in the epic age. Air services were available from Lankā and Ayodhyā. From the study of the

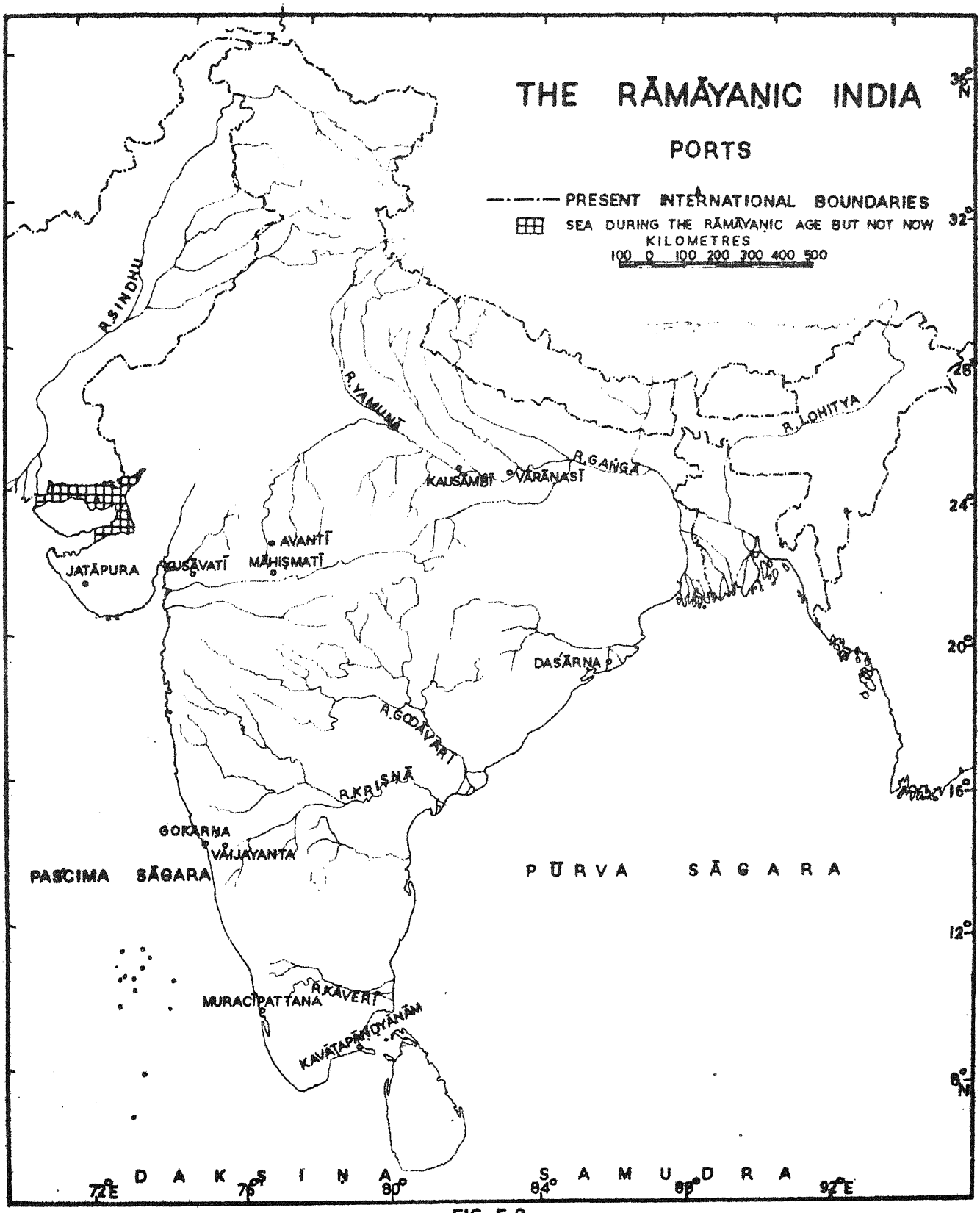
THE RĀMĀYAṆIC INDIA
PORTS
PRESENT INTERNATIONAL BOUNDARIES
SEA DURING THE RĀMĀYAṆIC AGE BUT NOT NOW
KILOMETRES
100 0 100 200 300 400 500
R.SINDHU
R.YAMUNĀ
R.GAṄGĀ
R.LOHITYA
KAUSĀMBĪ
VĀRĀṆASĪ
AVANTĪ
JATĀPURA
KUŚĀVATĪ
MĀHIṢMATĪ
DAŚĀRṆA
R.GODĀVARĪ
R.KṚṢṆĀ
GOKARṆA
VAIJAYANTA
PAŚCIMA SĀGARA
PŪRVA SĀGARA
R.KĀVERĪ
MURACIPATTANA
KAVĀṬAPĀṆṬYĀṆĀM
D A K Ṣ I Ṇ A S A M U D R A
72°E
76°
80°
84°
88°
92°E
36°N
32°
28°
24°
20°
16°
12°
8°N

FIG. 5.3

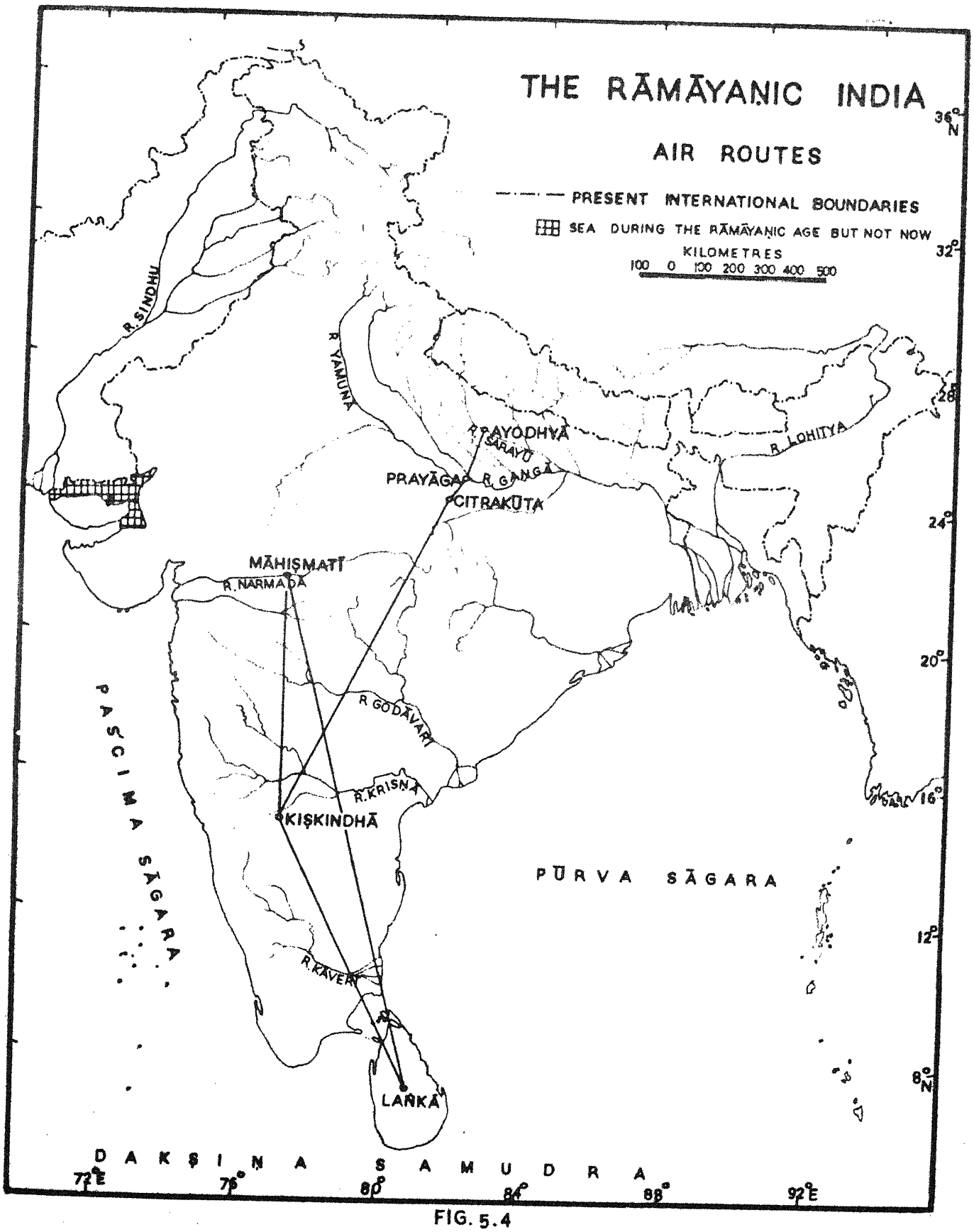
THE RĀMĀYAṆIC INDIA
AIR ROUTES
PRESENT INTERNATIONAL BOUNDARIES
SEA DURING THE RĀMĀYAṆIC AGE BUT NOT NOW
KILOMETRES
100 0 100 200 300 400 500
R. SINDHU
R. YAMUNĀ
AYODHYĀ
SARAYŪ
PRAYĀGA
R. GANGĀ
CITRAKŪTA
R. LOHITYA
MĀHIṢMATĪ
R. NARMADĀ
R. GODĀVARĪ
R. KRIṢṆA
KIṢKINDHĀ
PAŚCIMA SĀGARA
PŪRVA SĀGARA
R. KĀVERĪ
LAṄKĀ
DAKṢIṆA SAMUDRA
36° N
32°
28°
24°
20°
16°
12°
8° N
72° E
76°
80°
84°
88°
92° E

FIG. 5.4

Rāmāyaṇa, we come to the conclusion that there were airports in the big cities and they were connected with international air routes. The important air routes which are mentioned in the Rāmāyaṇa are (Fig. 5.4).

(i) Laṅkā - Kiṣkiṅdhā - Citrakūṭa, Bharadwāj āśrama - Ayodhyā.

(ii) Laṅkā - Manimayī city - Aśmanagara - Laṅkā.

(iii) Laṅkā - Māhiṣmatī - Kiṣkiṅdhā - Laṅkā.

(iv) Laṅkā - Himavāna, Meru - Kailāsa - Laṅkā.

(v) Ayodhyā to four cardinal points, Vindhyan ranges, Āgastya Āśrama - Ayodhyā.

Rāma's Journey by Planes

Rāma having achieved his objective in the battle against Rāvaṇa, asked Vibhīṣaṇa to bring quickly the Puṣpaka vimāna so that he might reach back Ayodhyā in the shortest possible time as Bharata was anxiously waiting for his return and living a life of austerity and negation. The air car (vimāna) was wrought in gold and flew with the swiftness of the mind. Rāma ascended in that peerless vimāna with Sītā accompanied by his valorous bowman and brother Lakshmaṇa. The vimāna was spacious enough to provide seats to all the lieutenants and companions of Rāma comfortably and without overcrowding[194]. Puṣpaka, originally belonged to Kubera and it was sent back to him by Rāma after he had reached Ayodhyā[195].

Apart, Rāma journeyed through Puṣpaka from Ayodhyā to four cardinal points up to Vindhyana ranges. He also went to Agastya āśrama where he stayed for one night. There after, he

travelled for Ayodhyā[196]. It is a clear proof of the use of the planes for going to great heights[197] and long distances. In this connection it should be remembered that it was the duty of the king to look after the welfare of his subjects and ensure proper administration of the territory under his control. It can be, therefore, inferred that these vimānas were used by the kings for personally supervising the State affairs.

Rāvaṇa's Journey

Rāvaṇa, the king of Laṅkā, too travelled through Puṣpaka from Laṅkā to Himavāna and the domain of Yama[198] (in south probably Antarctica continent)[199]. Besides, he reached Bhogvatī (ruled by Vāsukī, the ruler of Nāgas)[200] through vimāna, subdued the Nāgas and went to the city of Maṇimayī (made of gems) inhabited by Nivātakavachas. There he stayed for one year, enjoyed pleasures and duly learnt a hundred conjuring tricks (Māyā) after carefully observing them.

Nāgaloka, the country of serpents, also known as Rasātala where Rāvaṇa travelled, is the modern tropical areas of America[201]. In Mexico Maya civilization was in existence in the early period. The Mayas at Yucatan were also civilized as ancient Indians and probably here Rāvaṇa learnt a hundred conjuring tricks which is also termed in Sanskrit as Māyā.

From Rasātala, Rāvaṇa air dashed in search of the city of Varuṇa and reached Aśmanagara which is identified with modern Smyrna or Izmir of Turkey[202]. This region was inhabited by Kālkeyas, Devas, Gandharvas and Dānavas and Rāvaṇa is described

to have collected the virgin daughters of the Nāgas, Gandharvas, Daityas and Dānavas. The poet's description of the daughters[203] racially coincides with the modern Mediterraneans (fair complexion with reddish tinge like Europeans). So, as described in the Rāmāyaṇa[204], the countries of Gandharvas and Dānavas lie between the modern Persia to Mt. Ararat (Turkey) and Egypt[205].

Besides these, Rāvaṇa with his ministers travelled in Puṣpaka from Laṅkā to Māhiṣmatī[206], ruled by Kārtavīryārjuna, the Haihaya king. Māhiṣmatī is identified[207] with modern Maheswara, situated on the right bank of Narmdā forty miles to the south of Indore. From Māhiṣmatī, Rāvaṇa flew over the entire globe and en route reached Kiṣkiṇdhā ruled by Bāli[208]. Bāli too had a fast moving plane in which he travelled with Rāvaṇa[209].

The Rāmāyaṇa also describes the aerial cars of different gods i.e. Kubera, Yama, Indra, Varuṇa and Brahmā etc. and of great sages[210]. In this aerial car they travelled to partake in a sacrifice or to attend any other business of their interest[211]. Occasionally, we read that people of the epic age were also very fond of celebrating picnics either in gardens or on hills through plane. Mandodarī, with her husband Rāvaṇa, roamed in an aerial car on Mt. Kailāsa, Mt. Mandara, Mt. Meru and in the grove known by the name of Caitraratha (belonging to Kubera and named after Caitraratha, the king of Gandharvas who planted it) as well as all celestial gardens and various lands[212].

(iv) <u>Transport Corporations</u>

The economic life of ancient India evinces a developed state of co-operative activity which inspires the formation of

various agencies for mutual assistance. The Sārtha stands for the ancient transport agency not only inter State Corporation but also covered the foreign countries. Amarkosa defines Sārtha as a carvan - 'सार्थो हवन वृन्दम्'[213].

Vedic literature indirectly mentions the transport corporations. The general manager of the corporation was called Rathaspati[214]. The Rāmāyaṇa mentions the term Sārtha[215] only once which indicates about the transport corporation which was working in that period. There were also other forms of corporate organisations besides Sārtha. They were mainly Śreṇī and Nigama.

The Śreṇī

The term Śreṇī which occurs very frequently in the Rāmāyaṇa, suffered so much denunciations at the hands of recondite scholars that some commentators of the Rāmāyaṇa take it in the literal sense of a 'row' and connote it as an 'assemblage of the town people or subjects' (प्रजा समूहा: या नगरवासी समूहा:[216]). The Kalyāṇa Kalpataru and Tilaka Ṭīkā seem to assign a technical sense of this term and explain as ' नाना जातीय संघ ' i.e., 'association of man of various castes[217].

The trade and industry of the country during the Rāmāyaṇic age were characterised by highly developed organisations. The institution called Śreṇī was a corporation of men following the same trade, art or craft belonging to the same or different castes and resembled the guilds of medieval Europe. Almost every important business and trade had its own guilds which laid down its rules and regulations for the conduct of members with a view

to safe guard their interests and these rules were valid in the eyes of law. Each Śreṇī had a definite constitution with a President and a small executive council and head of the Śreṇī was an important person in the court of a King. The Rāmāyaṇa provides ample information with regard to the structure and function of these Śreṇīs in the epic age.

The Rāmāyaṇa clearly mentions that the mukhyas (chiefs) of the Śreṇī, on the occasion of the royal function, were invited by the ruler to participate in the ceremonies[218]. The Rāmāyaṇa[219] gives a long list of artisans and merchants who accompanied Bharata to Citrakūṭa as he went to persuade Rāma to return to Ayodhyā. Later, at Citrakūṭa, the words of Bharata[220] clearly allude to the presence of Śreṇīs among the assemblage. These references undoubtedly ratify the presence of guilds in Ayodhyā and also affirm that they were recognised by the rulers.

The Nigama or Naigama

Similar in nature with the Śreṇī, was another organisation in the Rāmāyaṇic age, known as Nigama or Naigama. Indeed, the Nigama appears to be an offshoot of the Śreṇī. The Nigama or Naigama, both the words are mentioned in the Rāmāyaṇa. Technically, the terms Nigama as well as Naigama adhere to a 'Corporate body' and thus, the word Nigama may mean a corporate body of merchants or an individual member of such a body. Jaiswal[221] has explained that Nigama is the association or guild of the city merchants. In Jātakas period, a difference is evident in the organisation of the artisans on the one hand and the traders and merchants on the other and the latter contrived themselves into an independent

body with the designation Nigama or Naigama. It is also notable that the constitution of Nigama subsisted on the wealthy and cultured people of the society and it had a wider field of activity having greater powers[222].

The author of the Rāmāyaṇa has referred to Nigamas more than he has referred to the Śreṇīs. The commentator of the Kalyāṇa Kalpataru, C.L. Goswami is somewhat ambiguous in explaining the world Nigama and seems to be oblivious of its technical character. On the one hand he calls it in Uttarakāṇḍa, 'a group of Vedic Scholars' or 'brāhmaṇs well-versed in the Vedas'[223] and on the other in Ayodhyākaṇḍa, he terms it as a 'mercantile community', or 'a guild of merchants'[224]. The latter interpretation seems to be correct. In fact, as noted earlier about the Śreṇīs, the Nigamas also delighted in certain judicial powers and their representatives had a right to be consulted by the monarch in matters relating to them[225].

In the Rāmāyaṇic age, the organisation of the Nigamas was perhaps of the same character as that of the Śreṇīs and it is proved from the fact that like the Śreṇī-mukhyas, the Rāmāyaṇa also refers to Nigama-mukhyas[226]. There is also a mention of the Nigama-Vriddhas[227], who attended the Rāma's court alongwith Kulīnas (noble descent) and this evidently suggests that experienced people fully conversant with the rules and conventions of the Nigama, were appointed to present the organisation in the king's court.

Moreover, the Rāmāyaṇa displays that the Nigamas enjoyed a very high status in the society and commanded great respect from the kings. After Rāma's departure to the forest, Daśaratha upbraided himself for having hastily acted without taking counsel with his well-wishers, ministers and the Naigamas[228]. Rāma invited, among others, the Nigamas for deliberation when the brāhmaṇa, whose son had prematurely died, was accusing him of mal-administration[229]. Like the Śrenī Mukhyas, the Nigamas also participated in the coronation ceremonies such as on the day of the Rāma's coronation[230], they are seen among the distinguished assemblage waiting at the royal gate. Clearly, they are constantly associated with every coronation referred to the epic[231]. Lastly, it may be pointed out that the Nigamas are not to be found among the Vānaras and the Rākshasas.

(b) Means of Communication

It is true that Indians from the hoary past had come to have a concept of Geography and had realized the importance of means of communication which is found in their written documents of literature. It is generally recognized that a number of scientific inventions which originated in India not only attracted the attention of western thinkers but also influenced in no small measure the growth of different sciences. India's pre-eminent geographical position in the ancient world proved to be of pivotal importance in the movement of technological practices.

Even in the Vedic period scientific knowledge regarding voice-communication was of a high order. Probably, Wireless was

well known to the Aryans. Means of voice communication are as important for the growth and development of trade and industry as important are the means of transportation. In the Rāmāyaṇic age means of voice communication were used either for transmitting messages or for intelligence work to be carried out by a system of espionage.

On the basis of the study we find that in the ramification of this process, means of voice communication come in three forms - (i) Wireless, (ii) Cara and (iii) Dūta.

(i) Wireless - The author of the Rāmāyaṇa has not mentioned the details of wireless system as existed in that age. There are, however, evidences to testify that in the Vedic period and thereafter the Aryans had a power of transmitting and receiving the messages; a system closely resembling to the modern wireless. This is also confirmed by the study of the Rāmāyaṇa[232] where the messages from the unfathom depths of sky are relayed in the form of ākāśavāṇīs. It may also be pointed out that there are no references to the existence of broadcasting station in the epic age. Besides, the Rākshasas were also acquainted with this technique and it is said that Rāvaṇa dispatched an ogre named Śuka, as an envoy to carry the message to Sugrīva. He stationed himself in the air and through wireless he transmitted the message of Rāvaṇa and was then captured by the monkeys[233].

General facts about cara and Dūta

In ancient India, mainly in the epic period, which consisted of an aggregation of small independent and semi-

independent Janapadas where one was always ardent to engulf the weaker neighbour, the cara (spy) and Dūta (messenger) were indispensable tools of security for a king. In Vedic literature we find such diplomatic agents[234].

The great poet Vālmīki reckons the dūtas 'the eyes of a king[235] because kings perceive all remote things through their spies, hence they are called far-sighted. The poet again points out that the wise king who collects a knowledge of his enemy through spies, can, putting forth a modicum of effort in conflict, neutralise his exertions[236]. The poet also seems to recognise a distinction between a cara (~~er cara~~ or caraka) and a dūta (a messenger or an envoy), the former being a secret representative of his master while the latter, an open one[237].

The Rāmāyaṇa mentions three kinds of servants. One who, when entrusted by his master with a duty difficult to perform, does even more (of course) in consonance with that work, is termed a 'purusottama' (foremost among men). One who, though qualified and capable, does not, when confided with some work, accomplish any other work liked by the king (his master) is called a 'madhyama nara' (a mediocre man). And he is termed as a 'puruṣādhama' (lowest of men) who, entrusted with any work of the king, does not, though qualified and capable, accomplish it[238]. Hanumāna (the dūta of Rāma) was a puruṣottama because extra work was done by him in addition to his duty of search for Sītā and no dishonour was brought to his ownself. He accomplished many works without marring the prime one and thus proved himself an efficient dūta, in letter and spirit[239].

(ii) Cara (Spy)

The cara was a secret emisary and was indispensable in war time. In the Rāmāyaṇic age, at the time of war, the kings had a regular secret service department[240], the main functions of which were to evaluate the strength of enemy[241], to study the plans of his fortification and to investigate his military plans and movements[242]. It was also to find out the secret agents of the enemy walking in disguise in his camp with similar motives[243]. Spies were also employed to get apprised of the loyalty of the fugitive officers or relatives of the enemy seeking friendship (or service) with the king[244]. Occasionally, they were also instructed to kill secretly the enemy or his officers[245].

After the abduction of Sītā, Rāvaṇa appointed eight spies to bring him information about the movements of Rāma[246]. Soon after, when Rāma besieged the Laṅkā, he appointed Vibhīṣaṇa chief of the 'Intelligence Bureau'[247] and the latter employed his personal sacivas as spies to acquire the information about the future plans of Rāvaṇa[248]. He captured Śuka and Sāraṇa[249] and Śārdūla with his party[250] because they were spying in his camp. Thus, we can assume certainly that Vibhīṣaṇa kept minute to minute information of the movements of Rāvaṇa with the help of his spies.

The spies wandered here and there variously disguised to gather information about the strength and plans of the enemy. Hanumāna approached Rāma, on the Ṛsyamūka mountain in the form of a mendicant, and sacivas of Vibhīṣaṇa entered Laṅkā in the form of sakunis (a bird). The spies of Rāvaṇa spied Rāma's camp in the guise of the Vānaras[251]. Occasionally, pretenders offended and

expelled from the kingdom by their master, entered into the service of the enemy and tried to spy. This can be deduced from the statement of Aṅgada[252].

The rules for the treatment of spy were rather unmerciful. If apprehended, he was mercilessly beaten and roughly handled. Śārdūla (spy of Rāvaṇa) when detected was made to march hither and thither through various gates of the army, severely belaboured on all sides with Knees, fists, teeth and palms by the indignant monkeys[253]. Commonly, a spy was ultimately put to death. Śuka and Sāraṇa, when detected and presented before Rāma, were hopeless about their life[254].

(iii) Dūta (a messenger or an envoy)

The dūta was regarded as inviolable in ancient India. The Rāmāyaṇa[255] says that dūta is a mere messenger to communicate his master's message. In the epic age two types of dūtas are mentioned by the poet.

(i) Ordinary dūta who carried his master's message to their relatives or kings or Risis well-versed in the Vedas. Such messengers[256] were despatched by Vasiṣṭha to fetch Bharata and Śatrughna from Kekaya. Rāma sent his ordinary dūtas[257] to Vālmīki āśrama and invited Sītā to show her sanctity.

(ii) Special dūta of high rank, well qualified, also termed as Sacivas or amātyas[258], by the poet such as Hanumāna, Aṅgada, Prahasta, Śuka, Sāraṇa and Śārdūla.

The responsibility of a dūta was great. An imprudent move taken by an unreflecting dūta regardless of the exigencies of time

and place could set at nought actions even on the verge of enjoyment[259]. Not only that, even good policies traced out by a ruler in consultation with his ministers failed to yield good results by a conceited messenger[260]. Hence, high qualifications were demanded of a dūta. He was to be a native (जानपदा:), learned (विद्वान्), clever (दक्षिण:), ready-witted (प्रतिभावान्), representing the truth (यथोक्तवादी), and able to distinguish between right and wrong (पण्डित:)[261]. He was to be well-versed in the lores (शास्त्रविद्), clever in speech (वाक्य कुशल:), well disposed (सुहृद्), wise (सप्रतिभ:) of unimpeachable honesty (शुचि:) and born in a high family (कुले महति चोत्पन्न:)[262]. He was to be polite while delivering his message[263]. For achieving success, he was to enriched with firmness (धृति:), vision (दृष्टि:), understanding (मति:) and skill (दाक्ष्यम्)[264].

In the epic Hanumāna[265], Aṅgada and Prahasta[266] were employed as dūtas by their masters and of these Hanumāna played very important role of an envoy in quest of Sītā and he behaved himself in Laṅkā as if he was entrusted with obsolute authority. In his master's interest, after meeting Sītā in Laṅkā, he reasoned out himself that since the diplomatic expedients, sāma, dāma and bheda could be of no use with the ogres, Rāma of necessity shall have to apply danda (war)[267], therefore, he should know the technique of war of the ogres[268], situation and defence of their fort[269]. Besides, when Hanumāna entered Laṅkā without passing through the gate, he encountered the guardian deity, this becomes clear that at this stage he was not a dūta but a cara[270].

The treatment accorded by the enemy to the dūta and cara differed as much as the official status. Since a dūta was supposed to be deliverating his masters message adverdum, he should not be killed even if he is provoking[271]. For the biggest offence the highest punishment prescribed for him was flogging and deforming[272]. When Rāvaṇa ordered death for Hanumāna, Vibhīṣaṇa advised that it is against the canons of Royal Code because several punishments have been prescribed and accordingly the ogres set fire to the tail of Hanumāna[273].

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51. Rām. II.26.15.

52. Rām. III.35.10.

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57. "श्रौ च ऊर्ध्वौ च पार्श्वस्थौ ध्वजौ पार्श्वाग्रसंस्थितौ ।" Rām. VI.71.21.

58. .....यथाऽत्रा वेष्टित शक्ति लोमरम् ।" Rām. V.47.5.

59. "तं मेरुशिखराकारं तप्तकाञ्चन भूषणम्।" Rām. III.22.13.
"...प्रतप्तजाम्बूनद जाल चित्रितम् ।" Rām. V.47.4.
"स रथं भूषयित्वाथ सुचिरं हेमभूषितम्।" Rām. VI.90.9.
"ततः काञ्चनचित्राङ्गः किङ्किणीशतभूषितः ।" Rām. VI.102.10.

60. Rām. III.22.15; VI.95.30; VI.102.10.

61. "ततोऽवज मुपागम्य हेमदण्ड समुच्छ्रितम्।" Rām. III.23.4.
"छत्रं शतशलाकं च दिव्यमालोप शोभितम्।
भग्नदण्डमिदं सौम्य भूमौ कस्य निपातितम्।"
Rām. III.64.45-46.
"रुक्मवेणुध्वजः श्रीमान् देवराज रथो वरः ।" Rām. VI.102.11.

62. Rām. II.96.13; V.47.4; VI.44.8; VI.51.26; VI.53.7;
VI.78.17; VI.80.14; VI.102.11; VI.106.1-2.

63. Rām. III.26.8; III.27.14-15.

64. Rām. III.46.28.

65. Rām. V.47.4.

66. "द्रुतं सूत समायुक्तं युक्ताष्टतुरगं रथम् ।" Rām. VI.95.33.

67. Rām. III.22.22; VI.102.11.

68. Rām. III.64.50; VI.75.10.

69. Rām. III.51.15; III.64.46.

70. "सहस्त्ररत्नसंयुक्तो रथोमेघसमस्वनः ।" Rām. VI.69.4.

71. ...व्याघ्रैर्वर्तिभिः स तु तीक्ष्ण दंष्ट्रैः Rām. V.48.18.

72. Rām. V.47.4; VI.90.9.

73. Rām. I.6.22.

74. "स तस्य सानष्ट वरान् महाहयान् समाहितान् भारसहान् विवर्तने"।
Rām. V.47.31.

75. Rām. V.47.2-6; Dutt, M.N., The Rāmāyaṇa, Eng. Tran. pp. 1026-27 quoted by Sharma, R. (1971), op.cit.,pp.396-397.

76. Rām. VI.80.10-16.

77. Rām. I.11.14-16; I.69.6-7; II Cantos. 68-71; II.Cantos. 49-50; and VII. Canto. 64 respectively.

78. Rām. I.5.8; II.5.18; VI.67.83.

79. Rām. II.6.18; V.3.19.

80. Rām. VI.67.83; VII.64.3; VII.70.11.

81. Rām. I.4.29; I.18.18; II.6.11; II.33.4; II.71.45; V.53.20-21; VI.127.8; VII.43.13; VII.93.6.

82. Rām. V.53.21.

83. Rām. II.16.47; II.17.12; II.51.21; II.100.51; II.114.27; V.4.4.

84. Rām. I.4.29; I.77.7; II.3.17; II.5.16-17,21; II.6.17; II.7.2; II.15.28; II.16.42; II.17.3,5,6; II.26.2; II.33.8; II.41.17; II.43.13; II.57.16; II.67.20; II.70.26; III.23.2; V.4.14; V.53.21; V.60.18; VI.11.10; VI.62.1; VI.127.10; VII.93.6.

85. Rām. II.127.8.

86. Rām. V.53.20.

87. Rām. V.53.21.

88. Rām. II.6.11; II.17.16; II.51.21.

89. Rām. V.53.20-21; II.16.47; II.66.28; II.71.45; VII.43.13; VII.70.11.

90. Rām. V.12.18.

91. Rām. V.2.50-51; V.3.3.

92. Rām. II.6.11; II.16.47; II.17.16; II.51.21; II.68.28; II.71.45; VII.43.13; VII.70.11.

93. Rām. I.5.10; II.79.13,17.

94. Rām. II.82.20.

95. Rām. II.79.13.

96. Rām. II.80.9-10.

97. Rām. II.80.1.

98. Rām. II.80.1-2.

99. "द्वारेषु तासां चत्वारः संक्रमाः परमायताः। यन्त्रैरुपेता सुभिर्महद्भिर्दुर्गप्रवित्तिभिः। Rām. VI.3.16.

100. Rām. VI.22.63.

101. Rām. VI.22.45-46.

102. Rām. VI.22.62.

103. "पर्वताश्च समुत्पाट्य यन्त्रैः परिवहन्ति च।" Rām. VI.22.60.

104. "सूत्राण्यन्ये प्रगृह्णन्ति व्यायतं शतयोजनम् ।" Rām. VI.22.62.

105. दण्डानन्ये प्रगृह्णन्ति विचिन्वन्ति तथापरे ।" Rām. VI.22.64.

106. (a) Saxena, D.P. (1960) Ancient Indian Geography, pp.259-60.
(b) Bhargava, M.L. (1964) The Geography of Rgvedic India, pp. 1-23.

107. Rao, S.R. (1970) 'Shipping in Ancient India' in India's Contribution to World Thought and Culture (ICWTC), p.83.

108. Ram Chandran, K.S., 'Ancient Indian Maritime Ventures in ICWTC, op.cit., p.71.

109. Quoted by Siddiqi, W.H., 'India 's Contribution to Arab Civilization, ICWTC, op.cit., p.579.

110. Battacharya, N.N., 'India 's Contribution to Islamic thought and Culture' in ICWTC, op.cit., p.574.

111. Devahuti, D. 'India, Malaya and Borneo - Two Millennia of Contacts and Cultural Synthesis' in ICWTC, op.cit., p.510.

112. Chaturvedi, H.K., 'Ramayana in Asia' in ICWTC, op.cit., p.182.

113. Sharma, Raghunandan (2016 Sṁv.) 'Vaidika Sampatti', p.353.

114. Idem

115. Ibid, pp. 352-354

116. Singhal, D.P., 'Red Indians or Asiomericans - Indian Settlers in Middle and South America' in ICWTC, op.cit., p.635.

117. Ibid, pp. 635-636.

118. (i) Das, N.C. (1971 Reprinted) A note on the Ancient Geography of Asia (Compiled from Vālmīki Rāmāyaṇa), pp.78-79 fns.

(ii) Jaiswal and Tiwari (1978) 'Vālmīki's Knowledge of the Eastern World: A Geographical Treatise on Rāmāyaṇa', National Geographer, Vol.XIII, No.1, pp.26-32.

119. Rām. I.17.27.

120. Eng.Trans. of Das Rāmāyana, J.O.I.E., Vol.VII, No.3 quoted by Tripathi, M.P. (1969) Development of Geographic Knowledge in Ancient India, p. 138.

121. Tripathi, M.P. (1969), op.cit., p.139.

122. "गुहस्तोमेन वातेन महानौरिव सागरे । Rām. V.1.188.

123. "केचित्पर्वतसम्भाः सन्तुङ्गा दन्तिनोऽपरे । Rām. II.82.8.

124. Tripathi, M.P. (1969), op.cit., pp. 139-40.

125. Rām. I.54.21-23; I.55.3.

126. For further details of Ancient Indian Navigation, Cf. Mukerji, K.K. (1912), A History of Indian Shipping and Maritime activity, from Earliest Times.

127. Rām. IV.40.30-31.

128. Rām. I.5.10; II.6.11; II.14.27; II.16.47; II.42.23; II.48.4-35; VII.43.13; VII.70.11.

129. Rām. II.67.22.

130. Rām. V.25.14.

131. Rām. III.55.4; V.28.8; V.25.14; VI.50.1.

132. Rām. I.24.3; IV.40.28-29.

133. Rām. II. Canto. 52.

134. Rām. I.24.2-3.

135. Rām. II.89.7-20.

136. Rām. IV.40.25-29.

137. Rām. II.84.8; II.89.16.

138. Rām. II.89.10-11,16.

139. Rām. II.89.12.

140. Rām. I.45.7; II.52.9; II.81.6; II.89.7; V.25.14; V.28.8; VII.46.32.

141. Rām. I.24.2-3; II.52.6-7,75,78,80-81,93; II.89.7,16,20; III.55.4; VI.48.26; VI.50.1; VII.47.1; VII.48.22-23.

142. Rām. I.17.27; II.55.14-18; II.89.20; II.118.36; IV.20.29.

143. Rām. V.10.37.

144. Rām. II.89.11-12.

145. Rām. II.89.16-18.

146. Rām. II.84.7-8.

147. Rao, S.R. (1970), 'Shipping in Ancient India', op.cit.,p.97.

148. Rām. II.52.6; II.89.11.

149. Rām. II.52.81.

150. Rām. II.52.6,81.

151. Rām. II.52.6.

152. Rām. II.52.81.

153. Rām. II.52.80; VII.46.32; VII.48.23.

154. Rām. II.89.7,16,18,21; VII.46.32.

155. Rām. II.83.15; II.84.8.

156. Rām. III.42.20; IV.40.25; IV.42.14.

157. Dutt,B.B. (1977 Reprinted) 'Town Planning in Ancient India, p.26.

158. Rām. II.52.6; IV.40.34.

159. Rām. I.5.5-6; VII.53.11; II.68.13; I.33.19 and I.32.6 respectively.

160. Rām. VII.70.11,16; VII.72.17; VII.108.1,10-11.

161. Rām. V.31.7-9; II.71.9-10; VII.90.24; I.70.3; VII.38.14 and I.45.9-10 respectively.

162. Rām. VII.108.4.

163. Dey, N.L. (1979), The Geographical Dictionary of Ancient and Mediaeval India, p. 111.

164. "सौराष्ट्रान् [illegible] च ।" Rām. IV.42.6.

165. 'प्राचीनान् सिन्धुसौवीरान् सौराष्ट्रेयांश्चपार्थिवान् ।' Rām. I.13.27.

166. Cunningham, A. (1975) 'The Ancient Geography of India' New Enlarged Edition, pp. 416-421.

167. Rām. IV.42.13.

168. The Rāmāyaṇa mentions Gokaraṇa (I.42.13), Gokarṇa Parvata (V.35.82) and Gokarṇa āshrama (VII.9.47). According to a legend of the Rāmāyaṇa, King Bhagīratha engaged himself in asceticism in Gokarṇa, which is identified with modern Gomukhi two miles beyond Gangotri (Dey, N.L. (1979) op.cit., p.70). Gokarṇa Parvata was situated near sea-shore where Kesarī (a mighty monkey) killed Śambasādana (a demon) who oppressed the people of the sea-coast. Hanumāna was the son of Kesarī. In Gokarṇa āshrama, Rāvaṇa, the king of Laṅkā stayed to perform tapas. The latter two places may be identified with modern Gokarṇa, situated along sea-shore and was trading centre in ancient period. The Mahābhārata also supports this view (vide, Pargiter, F.E. (1894) Geography of Rāma's Exile' JRAS, p.260).

169. Rām. II.9.12; VII.55.6.

170. Dey, N.L. (1979), op.cit., p.131.

171. Ramchandran, K.S. (1970), op.cit., p.78.

172. Dey, N.L. (1979), op.cit., p.70.

173. Raghubaṁśa. VIII.33. vide, Law, B.C. (1976) Geographical Aspect of Kālidāsa's Works, p.13.

174. Dey, N.L., op.cit., p.16.

175. Rām. IV.41.9-12.

176. Rām. IV.41.9 and 19 respectively.

177. Vide Law, B.C. (1976), op.cit., p.27.

178. Quoted by Sircar, D.C. (1971), Studies in the Geography of Ancient and Medieval India, p. 186.

179. Ibid., p.187.

180. Arthaśāstra. II.1.76. vide Dikshitkar, V.R.R. 'Geographical data of Dekhan and South India as gathered from the Rāmāyaṇa, Indian Culture, Vol. I, No.4 (Calcutta), p.564.

181. Ram. IV.40.30 ff.

182. Jaiswal and Tiwari (1980) Vālmīki's Knowledge of the Western World: A Geographical Treatise on Rāmāyaṇa, National Geographer, Vol. XV, No.1, p.79.

183. "अध्वा हरी धनुतरुत्कष्टेन्द्र वातस्याधी वाज रत्नाः।
Rigveda IV.35.5. Vide, Shukla, R.K. (1982) Prācīna Bhārata men Yātāyāta Ke Vikasita Vaigyānika Sādhan Vikaasasheela Boogol Patrika, Vol.I, Nos. 1-2, pp. 25-26.

184. "इन्द्रो हरी युयुजे अश्विना रथं वृहस्पतिर्विश्वमनुप्राजत्।"
Rigveda I.116.6 vide Shukla, R.K. (1982) Idem.

185. Rigveda I.25.7; I.117.14-15; I.116.3-5; IV.36.1-2; VI.62.6.

186. Rām. V.1.180; V.8.2; VII.33.3.

187. Rām. V.1.174-175.

188. Rām. V.7.7-14.

189. Rām. V.8.1-5; VI.121.23-30; VI.126.29-63.

190. Rām. III.72.6; V.7.7; VI.122.26; VI.127.39; VII.77.11.

191. Rām. I.43.17-18.

192. श्रीपाल सिंह विशारद "सम्पाती गिद्ध नहीं विमान था", वादम्बिनी, जुलाई 1981 वर्ष 21, अंक 9, पृ0 121-125।

193. Rām. IV. 61.3. ff.

194. Rām. VI, Canto 121,122,123 and 126.

195. Rām. VI. 127.62.

196. Rām. VII.75.1[illegible]-13; VII.76.20 ff; VII.82.18.

197. Rām. VII.34.27.

198. Rām. VII.17.1; VII.20.1-3; VII.22.50.

199. Rām. IV.41.45. Vide, Tripathi, M.P. (1959) Science of Geography in the Vālmīki Rāmāyaṇa, Journal of the Oriental Institute, Baroda, Vol. IX, No.1, p.51.

200. Rām. VII.23.4-5.

201. Das, N.C. (1971), op.cit., pp. 78-79 fn.

202. Jaiswal and Tiwari (1980), op.cit., p.79.

203. "दीर्घैरेव भुजार्वृत्तैः पूर्णचन्द्र निभाननाः । वनिताभिः सदाभद्रे कुबेरो समुभा।
रक्षितः संवृतो: श्रेणिर्देशोनोहरा:।स्निग्धः सुदाङ्गना पुष्पा निकटफलवद्रुभा:।
Rām. VII.24.7-8.

204. Rām. IV. Canto. 42.

205. Jaiswal and Tiwari (1980), op.cit., pp.72-79.

206. Rām. VII.31.7 ff.

207. Dey, N.L. (1979), op.cit., p.120.

208. Rām. VII.34.1-3.

209. Rām. VII.34.21 ff.

210. Rām. III.11.92; III.5.13-14, VI.117.2-4.

211. Rām. III.23.30; III.24.24; VI.119.38; VI.120.22; VII.76.20,22.

212. Rām. VI.111.31-33.

213. Amarkoṣa - II.6.42.

214. Rigveda. X.64.10; X.93.7.

215. Rām. II.105.29.

216. Sharma, R. (1971), op.cit., p.372.

217. Vide Kalyāṇa Kalpataru and Tilaka Tīkā on Rāmāyaṇa II.105.11 and VI.127.4.

218. "ब्राह्मणश्च स राजन्याः श्रेणीमुख्याश्च सर्वशः ।" Rām. VI.127.4.

219. Rām. II.83.11 ff.

220. शृण्वन्तु मे परिषदो मन्त्रिणः श्रुतवृत्तयः ।" Rām. II.111.24.

221. Jaiswal, K.P. (1943), 'Hindu Policy', Bangalore, p.252-254, Vide, Sharma, R. (1971), op.cit., p.374.

222. Ibid., pp.252-4.

223. "तथा निगम वृद्धाश्च कुलीना ये च मानवाः ।" Rām. VII.37.21.
राजधर्मानिवेक्षन् वै ब्राह्मणैर्नैगमैः सह ।" Rām. VII.59a.2.

224. Rām. II.14.40,52; II.15.2,23.

225. Dixitar, V.R.R., Rāmāyaṇa Ke Kuch Rājnītika Siddhānta Aur Sāsana Saṁsthāyen'. Rāmāyaṇāṅka, p.345.

226. अमात्या बलमुख्याश्च मुख्या ये निगमस्य वा ।" Rām. II.15.2.

227. Rām. VII.37.21.

228. Rām. II.59.19.

229. Rām. VII.74.2,6.

230. Rām. II.15.2,23.

231. Rām. VII.107.1.

232. Rām. II.118.31; VII.110.8.

233. Rām. VI.20.20.

234. Taittirīya Saṁhitā, IV.5.7. vide, Sharma, R. (1971), op. cit, pp. 402-3.

235. "चारेण तस्मादुच्यन्ते राजानो दीर्घचक्षुषः ।" Rām. III.33.10.

236. "चारेण विदितः शत्रुः पण्डितैर्वसुधाधिपैः ।
युद्धेन स्वल्पेन यत्नेन समासाद्य निरस्यते ।।" Rām. VI.29.21.

237. This distinction may be clear from the details as given in the next pages.

238. Rām. VI.1.7-9; VI.5.8-10.

239. Rām. V.41.5.

240. Rām. VI.37.33-36.

241. "भक्षन्तौ वानरं सैन्यं पूर्ववद्यानुपलक्षितौ ।
परिमार्गं च कौ च वै च मुहुः पार्श्वगौ ।" Rām. VI.25.4.

242. Rām. VI.37.7-8 and VI.33.17 respectively.

243. Rām. VI.25.16,21; VI.29.18,21.

244. Rām. VI.17.42-44; VI.20.10 ff.

245. Rām. III.54.26-29.

246. Rām. III.54.26.

247. Rām. VI.37.33-36.

248. Rām. VI.13.7-8.

249. Rām. VI.25.13-14.

250. Rām. VI.29.25.

251. Rām. IV.3.2; VI.37.8; VI.25.9 respectively.

252. "शनैः सवाशात् सम्प्राप्त सर्वत्र तर्क एवहि ।
किंवासनीयः सहसा न वर्तव्यो विभीषण ।।" Rām. VI.17.39.

253. Rām. VI.30.7-9.

254. ----निराशोजीविते तथा ।" Rām. VI.25.15.

255. Rām. V.58,149.

256. Rām. II.68.3 ff.

257. Rām. VII.95.3-4.

258. Rām. IV.3.22; V.58.135; VI.25.1.

259. Rām. V.30-37.

260. Rām. V.30.38.

261. Rām. II.100.35.

262. Sharma, R. (1971), op.cit., p.407.

263. Rām. VII.11.23.

264. Rām. V.1.201.

265. Rām. V.35.74; V.36.2; V.48.61; V.50.19; V.51.38; V.58.135.

266. Rām. VI.41.77 and VII.11.22-23 respectively.

267. Rām. V.41.3-4.

268. Rām. V.41.7-9.

269. Rām. V.54.3-4.

270. Rām. V.4.2.

271. Rām. V.52.21.

It may, however, be noted that this rule was not respected by unrighteous kings. Rāvaṇa (VII.13.40) and Lavaṇa (VII.67.17-18) killed messengers from Kubera and Māndhātā respectively, even before they had finished their speech.

272. Rām. V.52.13-15; V.58.148-150.

273. Rām. V.53.5.

CHAPTER - VI

SETTLEMENTS

SETTLEMENTS

Human settlements are human occupance units[1] which variedly express the intimate relation of man and environment and their study forms one of the most important themes of Human Geography. The term "Settlement" is generic and of multiple connotation and varying use. The concept of Settlement geography is derived from the German 'Sied lungs geographie' which involves the study of man made visual imprints upon the cultural landscape in the process of occupancy[2]. Geographers and historians have long been interested in human Settlements. The present study analyses the growth and distribution of settlements, types, patterns, development of rural and urban centres and settlement planning.

Indian villages are among the oldest in the World and they exhibit direct response to human need and indicate the physico-cultural bearing. The village has been the mainstay of rural India. In fact, it is a sort of a rudimentary form of a town. A village has its natural growth whereas a town exhibits a developed stage of social organisation. Their study leads us to know the inter-relationship between man and his environment in addition to a study of the mode of the life of the people inhabiting them.

The study of early man in India is largely shrouded in mystery. The common belief is that the remotest past represented the Satayuga - an age when man lived in an ideal state of happiness, free from misery, want and decay, but history

unfortunately does not know of any such golden period. As our evidence goes, the earliest inhabitants of India were perhaps the Palaeolithic (derived from Greek words signifying old stone) men who were hunters and food gatherers and lived in very small communities. Afterwards, in the Mesolithic age they developed an aggressive attitude towards the environment. The men of Neolithic (from a Greek word meaning new stone) culture had made considerable advance towards civilisation and constructed dwellings, perhaps 'huts of wattle and thatches daubed with clay' for themselves. They engaged themselves in fishing and hunting, tended flocks of domesticated animals and began the cultivation of land[3]. This is the origin of the habitation which fore-runs the village organisation.

(a) Rural Settlements

(i) The Origin and Growth of the Villages

The acrospiric origin of the rural settlements must have begun in the pre-historic past when the primitive inhabitants of India built their crude shelter places to continue their aboriginal existence in the forested clearings of the country. It is believed that in the Indus valley, pre-historic civilization emerged from a wide-spread rural background of small village communities of farmers[4]. The Dravidians, so called from the sanskrit term Dravida, were one of the earliest cultured races of India and are believed to have had a settled village system, the details of which can now only be conjectured. It is believed that non-Aryan villages continued to exist side by side with the

Aryan Settlements[5] but authentic evidence is not available to clarify the character of these pre-historic villages.

In the Vedic period the Aryans lived in villages. First of all, the word 'grāma' has been used in the Rigveda[6] which means 'a collection' or a group of persons who were bound together by ties of kinship. It was a generic inclusive term for an inhabited settlement and was differentiated from a place with the fortification (nagara) or from a place which had the ruler's palace (Rājadhānī). Besides houses, small forts and village assembly halls which were an intregal part of the villages during vedic period are also mentioned in the Rigveda[7]. These forts were probably erected to protect the people from the enemies. The chief economies of Vedic village were agriculture and stock-raising and was headed by the leader of the village (Grāmaṇī)[8].

In the Vedic period the villages were found unevenly and their greatest density was in the Gaṅgā basin due to its soil fertility and genial climate[9]. Thus,the rural population had come to live in the well organised village settlements which resulted from the consolidation of the Aryan tribal system into large state and kingdoms. The village consisted of several joint families and rural community based on the decimal system existed in groups of 10, 20, 100 and 1000 villages. The rulers of each group were termed as Daśagrāmiṇī, Viṅśatipati, Śatagrāmiṇī and Sahastra grāmādhipati[10]. The growth of network of rural settlements in the fertile plains of Northern India was an ecological necessity for the agricultural mode of living.

Many authorities hold that the Aryan settlements were, first of all, established in the Sapta-Saindhava region of Northern India and later on they trickled down south-east and eastward (2500-2000 B.C.)[11] probably into two branches: one branch moved eastward and established in the Ghāgharā valley in Avadha with its capital at Ayodhyā, while the second branch moved along the Gaṅgā and first occupied the Yamunā-Gaṅgā doab and then afterwards the Kāsīs established their settlements in the neighbouring areas of Vārāṇasī. Later on, in post-Vedic period the whole northern part of India, specially the alluvial plains, were colonized.

Thus, it seems that Aryan colonization proceeded through the conquest of territories and subjugation of people. The territories were referred in Vedic period by the name of tribes or clans or chiefs such as Kekaya, Kuru Pāncāla etc. These names indicate that people or such societies occupied the territories and territorialization had begun. This process became important as the areas were occupied and the pre-existing people were acculturated into the Aryan administration and cultural matrix. These settlements originated on relatively high sites amid fertile agricultural areas where water supply was plentiful and life could be secure. These were the unplanned villages having poor transport facilities. Besides, relatively higher and slopy ground free from floods was also responsible for the morphometric development of rural settlements in the northern part of India.

In the Rāmāyaṇic age, we find the developed stage of rural settlements. The Rāmāyaṇa provides a lucid account of the villages and refers to that they were under the direct control of the king, but he used to take a share from the produce of the villagers. The Rāmāyaṇa does not mention any village in peninsular, eastern and western India. It does not mean that villages did not exist. Although the poet has mentioned clearly the villages of northern India yet in southern and eastern parts of the country he has mentioned only the hermits of the sages and capital cities of the rulers. In the epic period, the villages were divided into different smaller territories and consisted of arable land, pastures, forests, rivulets and hills. The villages were the fundamental socio-economic units of settlements in ancient India. The Rāmāyaṇa mentions that king had direct control over the villages and Daśaratha is said as giving one thousand villages to Kausalyā, his eldest queen, as her property, so that she might support her dependants and servants[12]. Besides, Bharata is said as giving one hundred villages to Hanumāna in recompense for the delightful news[13].

(ii) Types, Size and Planning of the Villages

There is no sufficient reference to the types and size of the villages as existing in the pre-Rāmāyaṇic period. In the Rāmāyaṇa, mention is made of two types of villages, the agricultural villages as 'Grāmas' and the pastoral villages as Ghoṣas[14], the latter being smaller than the former. Their officials were the Grāmamahattara and Ghoṣamahattara respectively[15]. The Rāmāyaṇa has mentioned the pattern and lay-out of

the rural settlements. It is believed that villages were planned according to architectural planning. The epic mentions only five types of such planned houses and villages, i.e. Dandaka, Kārmuka, Padma, Svastika and Vardhamāna[16] (Fig. 6.1). In fact, the villages of the epic age were thoroughly planned, street patterns well laid out, drainage properly controlled, communal compartments separately marked out and a residential atmosphere created. The plans[17] are as follows:

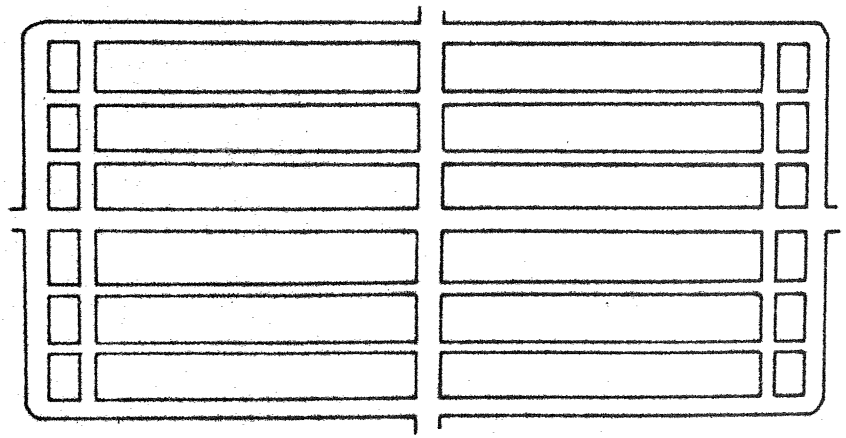
(i) Dandaka

It means a village that resembles phalanx or a staff. As in the Mayamatam, 'its streets are straight and cross each other at right angles at the centre, running west to east and south to north'. The Mānasāra describes thus, 'it is rectangular or square and possesses a rampart of the same shape'. It consists of one to five parallel streets (running from west to east) and two more streets are planted (forming right angles) at both extremities of the above parallel streets. And a third transverse street crosses them in the middle. The width of the street varies from one to five dandas (6' to 30'). The middle-most street is made equal to or broader than the rest. The two transverse streets at the extremities have a single row or houses; the principal (central) streets are lined with a double row of houses i.e. one on each side. There should be four large gates in the four cardinal points.

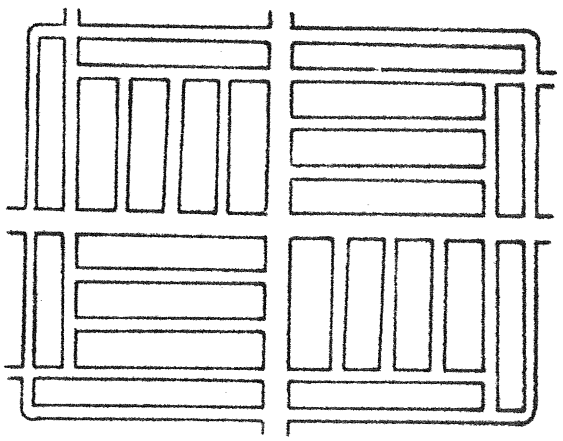
(ii) Kārmuka

It literally means a bow. Its shape is semi-circular or semi-elliptical like a bow and hence its name. This plan is

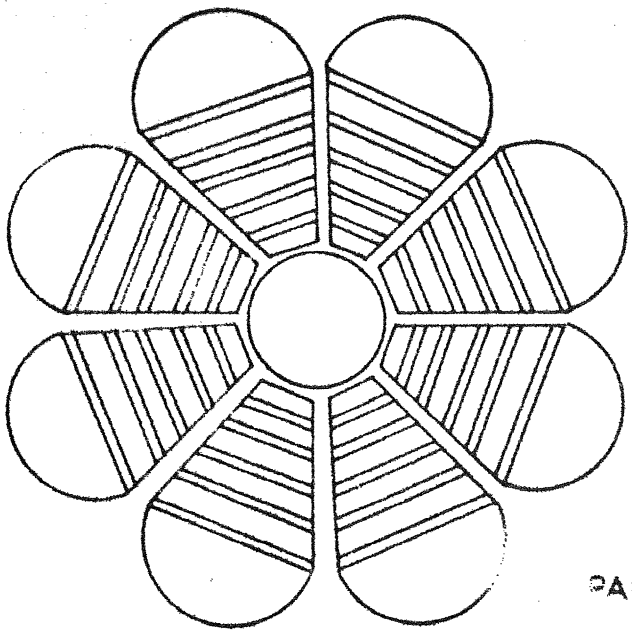
VILLAGE & TOWN PLANS IN ANCIENT INDIA



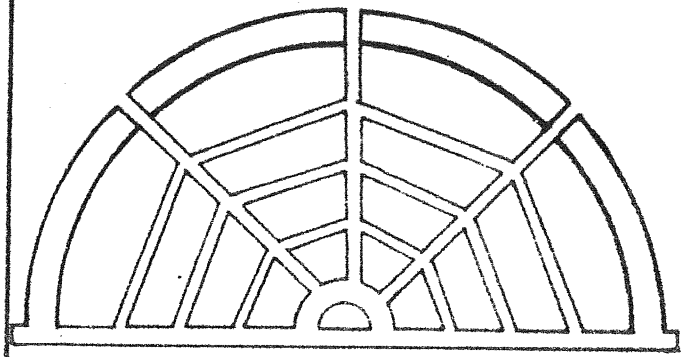
DAṆḌAKA



SVASTIKA



PADMAKA



KĀRMUKA

(AFTER- B. B. DUTT)

FIG. 6.1

generally suited to a riparian site or a sea shore. It is also adorned with streets, houses and temples, planned accordingly. Mathurā is described as 'Ardhacandra' corresponding with the Kārmuka plan.

(iii) Padma or Padmaka

As the word Padma indicates it was a lotus-shaped plan. The number of easterly streets may be seven, while the number of northerly streets may vary from three to five. According to Mānasāra, its length and breadth are made equal, while the enclosing walls may be quadrangular, sexagonal or octagonal.

(iv) Svastika

It resembles to the mystic figure of Svastika and streets were planned in conformity with the figure of Svastika.

(v) Vardhamāna

A village or house without any opening in the south is known as Vardhamāna.

About the size of the villages, there are no references available in the Rāmāyana. The epic mentions only mahāgrāma[18] which indicates a large village. It seems that there was a difference in grāma and mahāgrāma according to their size probably due to population.

Hermitages and Villages and Their Distribution

As mentioned earlier, the Rāmāyana mentions the villages only in the northern part of the country and clearly refers to the hermitage of the ascetics in the Peninsular India and

eastern part of the country. The main hermitages which are mentioned in the Rāmāyaṇa, give us an idea of the Aryan expansion in the southern part of the country. These hermitages were located along the river banks, tanks and lakes and these āśramas were generally situated not very far from the towns. Communication between towns and the āśramas was neither difficult nor very rare.

The head of an āśrama more correctly of an āśrama-maṇḍala was a Kulapati[19]. He was a man advanced both in age and penance[20]. It was under his guidance that other ascetics of the āśrama maṇḍala made efforts for their spiritual uplift. It was his primary concern to see that the whole environment of the maṇḍala remained congenial for the pursuit of ascetic practices and that the inmates of the āśrama-maṇḍala maintain inward and outward purity. It was his responsibility also to protect the inmates of the āśrama and at times when living became dangerous at a particular place, he moved with his followers to a new place[21].

In the Rāmāyaṇic age, ascetics were compelled to live in large groups by fear of the Rākshasas. The epic mentions munisaṅgha, ṛiṣisaṅgha and gaṇa[22] in relation to the ascetics. The place of their dwelling was termed as āśrama-maṇḍala[23]. It was a big locality consisting of several tāpasālayas or āśramas[24]. The outer portion of the āśrama was known as uṭaja[25], while the chambers, meant for dwelling in it, were termed as parṇaśālās[26]. There was an Agni-śālā or Agni-śaraṇa[27] attached to every āśrama in which were established a Vedi (an altar), and perhaps

sanctuaries for different deities[28]. The sages performed their daily Agnihotra and delivered religious discourses[29] in the Agniśālās. The whole structure of the āśrama was raised on walls of wood and clay, and pillars of bamboos with coverings of branches of trees, reeds, leaves and grass tightly fastened with strong cords[30].

The relationship between the kings and the sages was intimate. As the king was political head of the state, the ultimate responsibility of providing proper and adequate conditions for the carrying out of the righteous pursuits of the sages lays upon him[31]. Thus, to meet with the sages, he enquired about the welfare of their person and tapa[32]. The sages on their part, were the guardians and promoters of culture and they were deeply interested in the peace and progress of the state. Since this depended primarily on the soundness of the government machinery, they made anxious enquiries with regard to the welfare of the king's person (body) and family, the treasury and the allies, the capital and the country with all their people[33]. It appears that in the Rāmāyaṇic age, the interest of the sages in the affairs of the country was not casual but continuous.

The period of the Rāmāyaṇa represents the heyday of the āśramas, which were found in the continuous chain along the banks of rivers (or lakes) from North to South. The āśramas of Vālmīki, Vasiṣṭha, Viśvāmitra, Gautama, Bharadvāja, Atri, Śarabhaṅgā, Sutīkṣhṇa, Agastya and Mataṅga were important centres of religious activities. These āśramas were generally

situated at some distance from the towns where the sages usually selected a pleasant site in the interior of the forest to build their āśramas. They took special care to see that the site was fit for healthy living, being free from any inconvenience[34] and was rich in the supply of daily requirements[35].

The villages which are mentioned in the Rāmāyaṇa lie en route between Ayodhyā to Giribraja (capital of the Kekaya). On the instructions of Vaśiṣtha, the royal priest and preceptor, the messengers started their journey to Giribraja to fetch Bharata. They reached Kuliṅga city, afterwards they emerged from the village of Tejobhibhavana and thereafter reached the village named Abhikāla. The messengers then crossed the river Iksumatī[36] (modern Ghaggar). It seems that these villages which are unidentified were situated near the river-banks. Bharata alongwith his army followed another route from Giribraja to Ayodhyā and visited many villages on the way. From Rājagriha, Bharata proceeded in easterly direction and crossed many villages[37] in his route i.e. Ailadhāna, Śalyakarṣaṇa, Aṁsudhāna, Dharmavardhana, Jammuprastha, Toraṇa, Varūtha, Sarvatīrtha, Hastiprṣthaka, Lohitya, Ekaśāla and Vinata in which Aṁsudhāna, Ekaśāla, Ailadhāna, Lohitya and Vinata were situated on the river-banks of the Gaṅgā, Sthāṇumatī (unidentified) Śilāvahā[38] Kapivatī[39] and Gomatī respectively. Besides, the Rāmāyaṇa mentions a village named Nandigrāma[40] near Ayodhyā where Bharata resided during the exile of Rāma. According to the epic[41], it was situated at a distance of two miles from Ayodhyā. Dey[42] has identified it with the Nundgaon eight or nine miles to the south of Faizabad.

(b) Urban Settlements

(i) The Origin and Growth of Urban Settlements

When did man march towards urban life, is a difficult question, but it appears that progress from savage to urban life was slow and a gradual process. With the development of civilization, urbanization which was actually a great revolutionary change in the whole pattern of socio-economic life of the people in history, was brought about both by physical and cultural factors. Its first appearance is noticed on the banks of the rivers Sarāsvatī and Dṛiṣadvatī[43]. It was accompanied by great advancement in human knowledge and technical equipment. These developments made a great increase in agricultural production and it was enough to support the development of towns. There were few urban centres in this area and their size was also small. These early towns seem to be the products of local increment of concentrated and intensive agricultural activity.

The Indus civilization (Fig. 6.2) represents the earliest known development of large scale urbanization in ancient India. It can be taken as the glorious dawn of Indian urbanism. The excavations at Mohen-jo-dāro, Harappā, Kālibangāna and other sites[44] prove that Indians were acquainted with cities and city life from early times. The old ruins of towns with a systematic planning, having markets, roads, solid commodious houses of bricks equipped with drainage system, bath rooms, wells and other amenities, and arts and crafts of the people[45] give us a perfect picture of highly developed civilization of an early age.

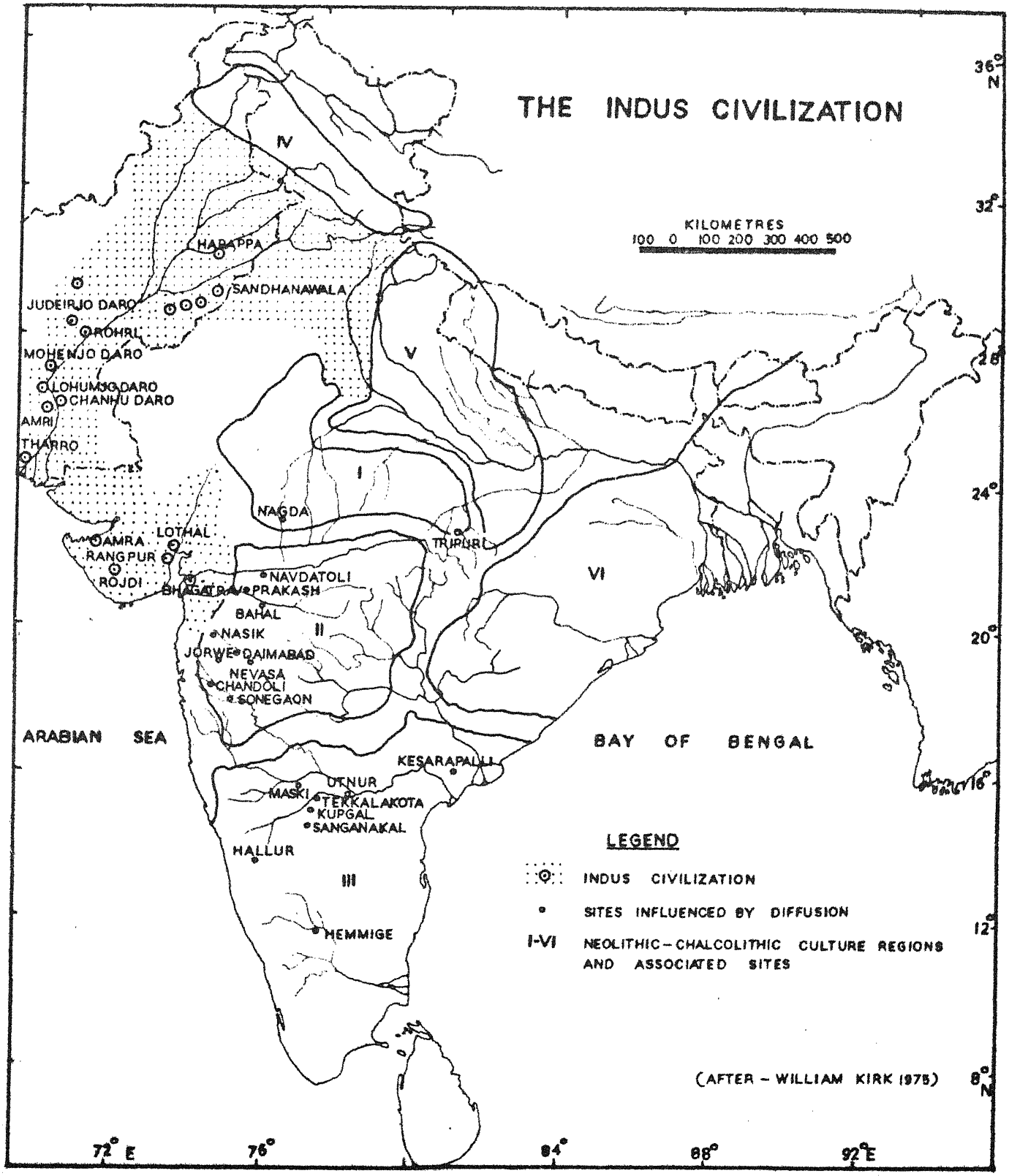

THE INDUS CIVILIZATION
KILOMETRES
100 0 100 200 300 400 500
HARAPPA
SANDHANAWALA
JUDEIRJO DARO
ROHRL
MOHENJO DARO
LOHUMJO DARO
CHANHU DARO
AMRI
THARRO
NAGDA
LOTHAL
DAMRA
RANGPUR
ROJDI
BHAGATRAV
NAVDATOLI
PRAKASH
BAHAL
NASIK
JORWE
DAIMABAD
NEVASA
CHANDOLI
SONEGAON
TRIPURI
KESARAPALLI
UTNUR
MASKI
TEKKALAKOTA
KUPGAL
SANGANAKAL
HALLUR
HEMMIGE
ARABIAN SEA
BAY OF BENGAL
I
II
III
IV
V
VI
LEGEND
INDUS CIVILIZATION
SITES INFLUENCED BY DIFFUSION
I-VI NEOLITHIC – CHALCOLITHIC CULTURE REGIONS AND ASSOCIATED SITES
(AFTER – WILLIAM KIRK 1975)
36° N
32°
28°
24°
20°
16°
12°
8° N
72° E
76°
84°
88°
92° E

FIG. 6.2

In the Vedic literature, the word 'Pura'[46] signifies the presence of town or city which was under the protection of king or ruler. Pura was ordinary a fort or stronghold, capable of withstanding a sudden attack or siege, and generally occupied by the king, the members of the Royal Family and the Royal attendants, in which all the valuable things belonging to the Royal household, consisting of hoards of gold, silver, jewels and probably large granaries were stored[47]. Such fortifications must have been occasionally of considerable size, as one is called broad (Pṛthvī) and wide (Urvī), i.e. it was something like a fortified town capable of accommodating not only the Royal household, but probably the nobles and rich merchants as well[48]. Later on, in the Rāmāyaṇic age on the basis of abundant references and glorious descriptions of various cities, it can be safely conjectured that towns were important economic and cultural units in ancient India. Cities were built on places where the necessities of life could be fulfilled easily. The cities and towns which are mentioned in the Rāmāyaṇa, measure the evolution of civilization and various cities of the epic period such as Ayodhyā, Kāśī or Vārāṇasī and Madhurā (Mathura) have been important cities representing the various evolutionary phases.

Factors affecting the Growth of Towns

Towns occupy a place of great importance in Human Geography due to their role in the political, social and economic life of a country. In a country like India with a long history,

they have undergone vast changes in course of time. The factors which affected the growth of towns in ancient India were topography, natural drainage, water supply, soil, climatic factors, agricultural land and transport facilities which were essential in location and planning of towns.

(i) Topography and slope influenced the location of urban centres. In the epic age the northern plains were most suitable for urban settlements while in the Peninsular India, topography influenced widely and few urban centres were in existence.

(ii) Rivers have, for human beings, always been a source of water supply. In ancient period, they were essential for a large agglomeration of population. The rivers have had a religious importance and river sites provided the best facilities for the origin and growth of cites. Various capital cities of the Rāmāyaṇic age such as Ayodhyā, Kausāmbī, Madhupurī, Hastināpura and Vārāṇasī were established on the river banks due to good water supply and transport facilities.

(iii) The problem of defence in ancient period was an important consideration in the location of towns and it was considered that protection afforded by streams at least in one side would be much advantageous. In the epic age, capital cities were walled and ditched.

(iv) The availability of food and other requirements was of no less importance in deciding the proper site of settlements.

(v) Transport facilities were also responsible for the evolution of trade and commercial towns. References are available to various river ports and sea ports in the Rāmāyaṇa.

(ii) Site and Situation of Urban Centres

The kind of site, selected for the establishment of an urban settlement or on which such a settlement gradually evolved, has depended throughout history on the primary function of the settlement[49]. The majority of the towns such as Ayodhyā, Kauśāmbī, Madhurā, Giribraja, Hastināpura, Māhiṣmatī and Laṅkā and many others of smaller size, grew up on account of politico-administrative reasons. These towns were sited at strategic points on the river banks. Among site considerations that have played a part in fixing the scenes of urban development, consideration of defence had been paramount. In the epic age the function of town walls was to strengthen and complete the natural defence. Besides, steep slope and water barriers individually or collectively offered defensive facilities to the towns. The site of Ayodhyā, at a meander loop site, was choosen a centre of urban settlement by the king Ikshvāku. The following table gives a list of major or capital cities and their association with rivers (Fig. 6.3).

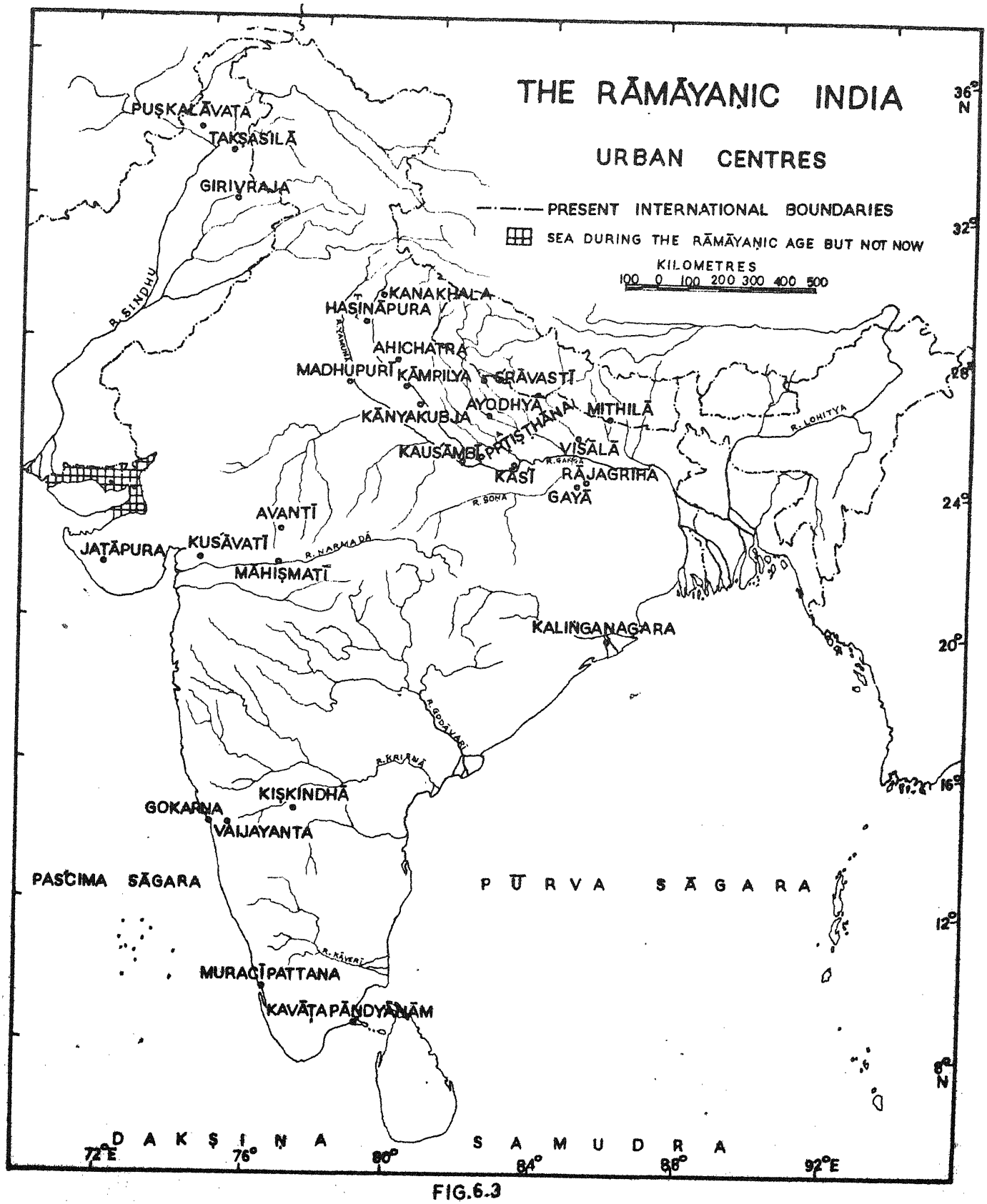

THE RĀMĀYAṆIC INDIA
URBAN CENTRES
PRESENT INTERNATIONAL BOUNDARIES
SEA DURING THE RĀMĀYAṆIC AGE BUT NOT NOW
KILOMETRES
100 0 100 200 300 400 500
PUṢKALĀVATA
TAKṢAŚILĀ
GIRIVRAJA
R. SINDHU
KANAKHALA
HASTINĀPURA
R. YAMUNĀ
AHICHATRA
MADHUPURĪ
KĀMPILYA
ŚRĀVASTĪ
AYODHYĀ
MITHILĀ
KĀNYAKUBJA
PRATIṢṬHĀNA
R. LOHITYA
KAUSĀMBĪ
VIŚĀLĀ
KĀŚĪ
R. GANGĀ
RĀJAGRIHA
GAYĀ
R. SONA
AVANTĪ
JAṬĀPURA
KUŚĀVATĪ
R. NARMADĀ
MĀHIṢMATĪ
KALIṄGANAGARA
R. GODĀVARĪ
R. KṚIṢṆĀ
KIṢKINDHĀ
GOKARṆA
VAIJAYANTA
PAŚCIMA SĀGARA
PŪRVA SĀGARA
R. KĀVERĪ
MURACĪPATTANA
KAVĀṬAPĀṆḌYAṆĀM
DAKṢIṆA SAMUDRA
36° N
32°
28°
24°
20°
16°
12°
8° N
72° E
76°
80°
84°
88°
92° E

FIG.6.3

City	Capital of	Modern name of the city	River on which it stood
Ayodhyā	Kosala	Ayodhyā	Sarayū, right bank.
Kāmpilya	Pāncāla	Kampil	Gaṅgā, right bank.
Kāśī or Vārāṇasī	Kāśī	Vārāṇasī	Gaṅgā, left bank.
Giribraja or Vasumatī	Magadha	Rājgir	Sumāgadhī, left bank.
Prayāga	Religious centre	Allahabad	On the confluence of the Gaṅgā and Yamunā.
Hastināpura	Kuru	Merat	Gaṅgā, right bank.
Madhurā	Śūrasena	Mathura	Yamunā, right bank.
Mahodaya	-	Kannauj	Gaṅgā, right bank.
Rājagriha or Rājagiri or Giribraja	Kekaya	Jalalpur	Vitastā, left bank.
Viśālā	-	Basarh or Vaishālī	Gaṅgā, left bank.
Takshaśilā	Gandharva	Taxila (Pakistan)	East of the Indus.
Puskalāvata	Gāndhāra	Charsadda (Pakistan)	Near the confluence of the river Swat with river Kabul.
Māhiṣmatī	Haihaya	Maheshvara	Narmadā, right bank.
Gayā	Gayā	Gaya	Phalgu

Another class of cities or towns besides the riparian settlements mentioned above, were the coastal towns which were the entrepots of trade and developed into ports during the Rāmāyaṇic age. Daśārṇa and Kabāṭapāṇḍyānām were the important ports on the east coast and Muracīpattana, Gokarṇa and Vaijayantī

on the west coast.

Besides, the other towns or cities which were not particularly associated with rivers or seas, were those whose location was based on (a) Strategy, (b) religious sanctity and (c) routes such as Kiṣkindhā, Madhumāna, Prayāga, Naimiṣāraṇya etc.

The Rāmāyaṇa indicates that there were three areas which favoured urban development more than any other area in the country. These were (i) the area between the Sindhu (Indus) and Śatadru rivers, (ii) the Gaṅgā basin as a whole and (iii) the plateau region of southern India up to the Kriṣnā river. It is significant that the fertility of the soil, congenial climate, economic importance of the forests, splendid networks of the rivers and waterways to facilitate irrigation, navigable rivers affording easy communication to sea, were the main factors for the development and growth of urban centres in northern India in the Rāmāyaṇic age when most of the part of the Peninsular India was densely forested.

The site of the above mentioned towns or cities seems to have been well selected in accordance with certain principles and the location of majority of the towns on river banks appears to be a common practice. The river banks offered the opportunity for colonisation, economic and cultural accessibility to the neighbouring regions. Due to nodal situation on the banks, cities and towns developed as junctions of important land routes.

(iii) Cities and Their Planning

The art and science of town planning dates back to the oldest civilization. Town planning, in the epic age, was based on certain basic rules such as the orientation of main streets, the sub-division of the city area and the width of the streets. The capital cities were the creation of careful forethought planning. Most of the capital cities had forts and other defensive works. Cities were adorned with temples, roads, footpaths, pleasure-gardens, big tanks, brilliant shops and various places of amusements. Thus, in the light of planning, a brief account of some important capital cities with respect to their plans and general lay-out is given here.

Ayodhyā

The Rāmāyaṇa has mentioned Ayodhyā as the capital of Kosala janapada, situated on the bank of Sarayū river. It was the seat of great kings of the solar dynasty of which the 56th emperor was Daśaratha, the father of Lord Rāma. The Ayodhyā (A-yodhyā) was named after its characteristic of being unassailable[50]. It was built by Vaivasvata Manu, the ruler of mankind. In the Rāmāyaṇa, the city is described as twelve yojanas in breadth. Its principal gates, placed at proper intervals, were large and lofty and its thoroughfares broad, it was imbellished with numerous highways which were regularly watered and strewn with flowers. The king Daśaratha made large extensions of the city in order to relieve congestion. It had arched gateways (Toraṇa) with large door panels and was provided with laid out

markets and equipped with all sorts of catapults and weapons and was peopled with all classes of craftsmen (śilpīs). Multitudes of lofty castles, countless flags flaunting high, numberless of Śataghnīs (interpreted by some as a kind of rocket and by others as iron pikes), numerous gardens and mango groves enhanced its beauty and magnificence. A deep-water ditch (Parikhā) girding the city made it difficult of access. It was laid out on a plain and there were many seven-storeyed buildings. The houses were arranged one beside another so that there was no plot of land without human dwellings. The water of the city was limpid and sweet to the taste. The facades of all the houses, owing to a harmony in their design and symmetry in their arrangement, were magnificent to behold. There were town halls and squares in the city. Ladies parks too were not wanting. Ayodhyā, is described as Aṣṭapadākāra corresponding with the Daṇḍaka plan, had four gateways and linear pattern of houses[51].

From the study it becomes clear that in the Rāmāyaṇic age, the city Ayodhyā dominated in the economic, political and religious life of the northern part of the country. Though the ancient city Ayodhyā has disappeared from the present urban scene, yet the existing high mounds at modern Ayodhyā remind us of a fairly advanced urban life. On account of its suitable location, the ancient city of Ayodhyā has remained a favoured spot of urban life throughout the successive periods of history. 'At the present day, the people point to Rāmaghāt and Guptāraghāt as the eastern and western boundaries of the old

city, and the southern boundary they extend to Bharat-kund, near Bhadarsa, a distance of six kos. But as these limits include all the places of pilgrimage, it would seem that the people consider them to have been formerly inside the city....'[52]

The morphological characteristics of Ayodhyā epitomise all the advanced techniques of town planning in the ancient period. 'The present city of Ayodhyā, confined to the north-east corner of the old site, is about two miles in length and about three quarters of a mile in breadth. The whole place bears a look of decay. There are no high mounds of ruins, covered with broken statues and sculptured pillars, such as mark the sites of other ancient cities, but only a low irregular mass of rubbish heaps, from which all the bricks have been excavated for the houses of neighbouring city of Faizabad. The new city of Faizabad is built chiefly of materials extracted from the ruins of Ayodhyā[53]. The two cities, i.e. Faizabad-cum-Ayodhyā (26^{o}-46'N-26^{o}-48'N and 82^{o}-6'E to 82^{o}-13'E Long.) occupy an area of 31.50 Km^2.

Kiṣkindhā

Kiṣkindhā, the capital of Bāli[54], a Vānara king, was situated inside a mountain cave crowded with joyous and well-fed people and decorated with buntings and flags[55]. The city was furnished with arched gateways[56], fortification wall and surrounded by deep and unassailable moat[57]. It was glorious, delightful and extensive abounding in precious stones and contained groves. It was thickly set with mansions as well as

with palaces and temples. There were multi-storeyed buildings, mountain streams free from mud, charming gardens and parks. It was full of abundant foodgrains. The highways were scented with the fragrance of wine and was planned on a magnificent scale[58]. Kiṣkindhā was situated near Prasravana mountain and consisted of wonderful woodland[59]. According to the Rāmāyaṇa, the total population of Kiṣkindhā, was hundreds of millions[60].

In the epic age, Kiṣkindhā was the name of a country (Janapada) also. Pargiter[61] has identified it close to Bellary and the country would have included the region around Bellary with the Tuṅgabhadrā and Vedavatī as its chief rivers. This locality is an ancient inhabited site. It was thickly studded with Neolithic settlements and Palaeolithic remains also have been found here[62]. It appears from the accounts of pilgrims that the ancient Kiṣkindhā is still called by that name and also by the name of Anagandi and Sewell[63] places it at or near Vijainagar.

Vārāṇasī

Vārāṇasī, a great religious and educational centre, has been mentioned in the Vedic literature as Kāśī[64]. Vārāṇasī which was the capital of Kāśī janapada, extended on the left bank of the Gaṅgā, between the Varaṇā river on the north-east and the Asi nala on the south-west, hence the name Vārāṇasī[65]. It is the oldest known enchanting city in the world and studded with high houses, magnificent gateways and strong wall[66]. 'The salient feature of Rājghāt excavation is the discovery of an

enormous clay rampart dating back to the earliest period of occupation on the site. The rampart appears to have been built directly over the natural soil by pilling up with dug-up clay to form a thick and compact wall with a pronounced slope towards the river Ganges..... A series of successive gravel sandy deposits alternating with silt just over the toe of the rampart show that the fortification on the river side was breached several times by floods'[67]. Vārāṇasī was a trade centre in ancient period and situated on a trade route.

Kauśāmbī

The city of Kauśāmbī was one of the most celebrated places in ancient India and its name was famous amongst Brāhmaṇs as well as Buddhists. According to the Rāmāyaṇa[68], the city was founded by Kuśāmba (a ruler, son of Kuśa) and named after himself. Kuśāmba was the tenth in descent from Pururavas. It was the capital of Vatsa kingdom before and after the time of Buddha. Cunningham[69] has identified it with the modern Kosam on the Yamunā, 38 miles south-west of Allahabad. According to him, not only do the people themselves put forward this claim, but it is also distinctly stated in an inscription of the time of Akbar, which is recorded on the great stone pillar, still standing in the midst of the ruins, that this is Kauśāmbī-pura. The present ruins of Kośāmbī consist of immense fortress formed of earthen ramparts and bastions with a circuit of 23,100 feet and ramparts are over 30 feet high. Originally there were ditches all around the fortress, but at present, there are only a few shallow hollows at the foot of the rampart.

Madhurā or Madhupurī (modern Mathura)

Madhurā or Madhupurī as the capital of Śūrasena janapada, was situated on the bank of the Yamunā, being the abode of Madhu whose son Lavaṇa was killed by Śatrughna, who founded the present city on the site of Madhuvana[70]. It looked like a half-moon (corresponding Kārmuka pattern of planning), where magnificent houses, streets, cross-roads, shops were respledent. It was a rich and prosperous city visited by merchants of various regions. There were many pleasant retreats, groves and charming parks. It was the main market and trade centre in the Rāmāyaṇic age because the Rāmāyaṇa itself mentions that it was inhabited by foreign merchants[71]. Law[72] has identified Madhurā or Madhupurī with Maholi, five miles to the south-west of the modern Mathura and this is not on the ancient site. Modern Mathura has moved to the north owing to the encroachment of the river. The Greeks were acquainted with this city by the name of Methora and Madaura (the city of the gods) and the Rāmāyaṇa[73] itself mentions that it was built by gods.

Giribraja

Giribraja, the capital of Magadha janapada, locally known as Rajgir, is one of the oldest cities of India and has a glorious history in the domains both of politics and religion. It was founded by the king Vasu and was, therefore, called Vasumatī. The city was named Giribraja being guarded by a cluster of close-set five hills and thus, it was a hill-girt city[74]. But the Rāmāyaṇa does not mention the name of the five

hills. In the Mahābhārata[75], these five hills have been named as Vipula, Varāha, Vṛiṣabha (Ṛiṣabha), Risigiri (Mātaṅga) and Caityaka. At the time of the Rāmāyaṇa, the river Sumāgdhī flowed through the town. It is identified with modern Rajgir. As far as the defence is concerned, Giribraja was a unique city in ancient India. Perhaps, there was no city in India which was so well-guarded by nature herself. 'The walls that surrounded the old city are still fairly complete, but the area inside these walls is now covered with jungle'[76]. Giribraja was an important trade centre where merchants, flocked from different quarters and routes from different janapadas, passed through the city. It was one of the great six cities during the life time of Buddha.

Rājagriha

Rājagṛiha, the capital of Kekaya janapada, was situated in the east of the Vitastā (Modern Jhelum) river. It was also known as Giribraja, which meant the agglomeration of hills, the foremost city[77]. It was ruled by the king Aśvapati, the maternal grand-father of Bharata. The city was good in appearance and the moat, enclosing the city, was unassailable by the enemies[78]. Cunningham[79] has identified it with the modern Jalalpur (Girjak) in Pakistan. It is believed that the battle of Alexander and Porous took place in this city[80].

Takshaśilā and Puṣkalāvata

According to the Rāmāyaṇa[81], Bharata, the younger brother of Rāma, founded two towns in the country of Gāṅdhāra

(this included the west Punjab and east Afganistan) one Takshaśilā and another Puṣkalāvata. In these two cities, Bharata placed his two sons as kings named Taksha at Takshaśilā and Puṣkala at Puṣkalāvata. Treasures in large quantities and gardens of various kinds embellished both the cities. Intensive commerce and a great concourse of people lent fame to both. In both of them, shops were symmetrically arranged in rows on both sides of the main thoroughfares. Many splendid shrines, useful trees like tāla, tamāla, bakula and the like rendered these cities pleasing to the eye. Cunningham[82] places the site of the Takshaśilā near Shahdheri, one mile north-east of Kala-ka-Serai between Attock and Rawalpindi, where he found the ruins of a fortified city. It was on such a trade route that the ancient city Takshaśilā grew up. 'The valley, in which the remains of Taxila lie, is a singularly pleasant one, well watered by the Haro river and its tributaries, and protected by a girdle of hills; on the north and east by snow mountains of Hazra and the Murree ridge, on the south and west by the well-known Margalla spur and other lower eminences. This position on the great trade route which used to connect Hindustan with central and western Asia, coupled with the strength of its natural defences, the fertility of the soil, and a constant supply of good water readily accounts for the importance of the city in early times'[83].

After the Rāmāyanic age, Takshaśila became the celebrated place of Buddhist pilgrimage. Takshaśilā contained the celebrated university of northern India, where the Vedas, all

the arts and sciences including Archery were taught and people from very distant parts of the country and abroad came here. It was Takshaśilā where Pāṇini, the celebrated grammarian, Jīvaka, the celebrated physician and Cāṇakya, the great politician received their education.

Puṣkalāvata, the capital of Gāṅdhāra janapada is identified with modern Charsadda (or Hastanagar), a little above the junction of the Swat with the Kabul river, eighteen miles north of Peshawar[84]. It was also known as a lotus city in ancient times.

Māhiṣmatī

It was the capital of Haihaya, the kingdom of the myriad handed Kārtya-Vīryārjuna of the Rāmāyaṇa. The city was crowded with happy and prosperous people and was famous for its splendour[85]. It is identified with modern Maheśvara, on the right bank of the Narmadā, forty miles to the south of Indore[86].

Besides the above capital cities, the Rāmāyaṇa mentions various cities and towns of ancient India but their detailed accounts and plans are not mentioned, therefore, it is enough to mention their names here for the references. The towns are as follows - Avanti (IV.41.10), Avantī (IV.42.14), Ābṛajantī (IV.41.10), Kanakhala (II.71.12), Ujjihānā (II.71.12), Kāmpilya (I.33.19), Kuliṅga (II.68.16), Kuśāvatī (VII.108.4), Candrakāntā (VII.102.9), Jatāpura (II.42.13), Dharmāraṇya (I.32.7), Pāṇḍya (IV.21.20), Pratiṣṭhāna (VII.56.26; VII.59.19), Prāgvata (VII.71.9-10), Mahodaya (I.32.6), Viśālā (I.45.10; I.47.12-18),

Vaijayanta (VII.55.6), Sāṅkāsya (I.70.3,7; I.71.16,19), Hastināpura (II.68.13), Aṅgadīya (VII.102.8-13), Aṅgalepa (IV.42.14), Kaliṅganagara (II.71.16), Madhumāna (VII.79.18), Mithilā (Janakapura) (I.66.21-22); I.73.5; VII.38.4,8), Śṛṅgaverapura (I.1.29; II.50.26; II.83.19; II.113.22; VI.123.53; VI.125.4-21) etc.

The cities and towns can be classified into various categories:

(i) Capital cities - Ayodhyā, Kiṣkiṅdhā, Vārāṇasī, Madhurā etc.

(ii) Market towns - Ayodhyā, Madhurā, Vārāṇasī etc.

(iii) Route centres - Kauśāmbī, Rājagriha, Hastināpura, Viśālā etc.

(iv) Fort towns - Most of the capital cities were fortified.

(v) Religious centres - Prayāga, Puṣkara, Naimiṣāraṇya, Kurukshetra, etc.

Fortification in the Rāmāyaṇic Age

Ancient Indian cities are the most convincing records of the evolution and progress of the people who imparted to the city a permanent value and embodied them in different designs. The most conspicuous characteristic of the ancient Indian towns was their fortification. In the Rāmāyaṇic age, India was a congeries of many small principalities which were often engaged in warfare with one another to gain over lordship. The life of citizens was necessarily insecure due to these internecine conflicts and this insecurity was further accentuated by the barbarian aborigines. Besides, the whole country was interspersed with thick forests alive with wild animals who, every

now and then, carried havoc into human habitations. These causes combined to impress upon the ancient civic architect the indispensibility of effective defence against the inroads of deadly foes, rational or irrational.

In the Vedic literature[87], references are available for forts of stone and sun-dried bricks which indicate that the inhabitants of ancient India were excellent fort-builders. The word 'pura' of which frequent mention is found in the Rigveda and later Brāhmaṇas[88], means a stronghold or a castle. Archaeological finds of the Indus valley[89] have confirmed this notion and also show that stone fortification had perhaps a continuous history in India.

The capital cities in ancient India were invariably surrounded by fortifications either natural or artificial. The esteem in which the fort was held in India, can well be estimated from the fact that it has been recognised as one of the constituents of a state[90]. Fort was considered an unfailing form of defence and it can be inferred from a passage of the Rāmāyaṇa[91] which states, 'And occupying the fortress of Laṅkā, you will be unassailable by enemies and capable of destroying them.' The name 'A-yodhyā' for Kosala's capital also corroborates this view[92].

On the basis of the nature of defence, the Rāmāyaṇa mentions four types of forts. One, situated in the midst of a river (or rivers), seems to have been a 'nādeya durga'. One, built in a valley in the midst of an encircling the range of

hills, was a 'parvata durga'. One, defended by the belt of forests on all side, was 'Vana durga' and one, having the protection of dug out artificial moat and wall, was a 'Kritrima durga'[93]. In making citadels, the strategical strength of site was kept in view and advantage taken of the natural features of the ground. Kuśāvatī and Madhumanta[94] were, for instance, built on mountain slopes, both having the Vindhyan ranges as their natural defence. Some forts, having no natural advantage, were defended by artificial means like Ayodhyā[95], while, some others such as Laṅkā possessed all the strategic advantages supplied by man and nature[96].

In the Rāmāyaṇic age, capital cities were systematically planned. Dwelling houses for the subjects, ministers and state-officials and palaces for the princes and kings had their exact positions. Public places, highways and cross-ways were discreetly ramified. The city was provided with impassable deep ditches full of dreadful aquatic creatures for defence purposes. The city was provided with a strong rampart encircling it, above which parapets and pinnacles were erected. On the top of the rampart and in the turrets, heavy rocks and logs were heaped, to be hurled against the enemy forcibly trying to enter the fort. There were a number of huge and strong gates fitted with massive bolts in the rampart. All sorts of arms and powerful and enormous catapults discharging darts and stones were equipped on the arches and above of the gates. The gates were also furnished with formidable sharp-edged steel clubs known as śataghnīs and other contrivances. The units of the army, fully

equipped and commanded by trusted officer, were also stationed on the gates. On and along the wall, high watch-towers were erected. In front of the gateways, there were extensive draw-bridges across the moats which were equipped with numerous engines. The forts were always garrisoned with a complete army of four limbs and large supplies of food and drinks were stored[97].

The account of the forts in the Rāmāyaṇa will remain incomplete without a reference to what the Rāmāyaṇa mentions 'bilas'. The word 'bila' literally meaning a hole or a cave, seems to have been employed by the author in a technical sense, viz., a 'mountain fort'. Two significant references to the 'bilas', are found in the Rāmāyaṇa. Māyāvī, an Asura, being chased by Bāli, the Vānara king, entered a 'bila', a capacious and impregnable operature in the earth covered with grass on the surface. Bāli immediately followed him leaving Sugrīva at the mouth of the 'bila'. It is significant to remember that in the 'bila', the Asuras (perhaps the relations and followers of Māyāvī) were already present, and after more than a year (a complete Saṁvatsara since Bāli had entered), Sugrīva heard the roars of Asuras. Taking Bāli to have been killed by the enemy, Sugrīva blocked the mouth of the 'bila' with a huge rock and returned to Kiṣkiṁdhā[98].

Besides the above, a more detailed description of the 'bila durga' is mentioned in the Rāmāyaṇa. When Vānara party in quest of Sītā reached in the south of the country, there they saw a cave named Rikshabila, which was open, and entered

it. The Vānaras moved and moved in darkness crossing over an hundred yojanas till they saw light. Then, they beheld trees, tanks, various birds wet with water, elegant dwellings all round veiled with nets of pearls[99]. From Svayamprabhā, a female ascetic, living there they learnt that fort was constructed by Maya, the 'Viśvakarmā' of the principal Dānavas[100]. Rikshabila was really a fort, is clear from the statement of Aṅgada, who proposed to settle there permanently because the place was incapable of being approached and abounded in viands and drinks[101]. It may be pointed out that Rikshabila was also provided with an artificial defence in the nature of an elementary maze, for before their chanced meeting with Svayamprabhā, the Vānaras had roamed about there in darkness for a considerable period[102] and later, they were delivered from it by Svayamprabhā, only on the condition that they will cover their eyes[103].

The above meaning of the word 'bila', is further corroborated by the use of the word 'guhā' in this context. Guhā means a cave but at one place it expressly stands for Kiṣkiṅdhā[104] which was definitely a fort.

Thus, ancient Indians may be credited to some epoch making contributions. The Rāmāyaṇa provides sufficient testimony to their scientific concepts and methods and knowledge of town planning was as extensive as it was intensive. In the epic age, civic sense was quite developed because the cities were more than centres of trade and corporate life. They were the ultimate resorts of the people against hostile invasion. Settlements were scarcely possible in the open country remote

from the walls of the towns or town-like villages[105]. Indeed, most of the ancient cities were, more or less, garden cities, and it can be well attested from the ancient literature. The most advance science of Europe has not yet improved upon the principles of the planning of garden cities of India based upon the Indian-village-plan as a unit[106]. In the epic age, villages, towns, cities and forts were scientifically established with full considerations of the geographical factors which govern the situation of the settlements. The credit goes to the Rāmāyaṇa which presents before us the clear picture of human society living in the villages and cities.

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21. Rām. II.116.24.

22. Rām. III.6.1; III.7.17 and II.116.24 respectively.

23. Rām. III.1.1; III.11.21-22.

24. Rām. III.11.22 ff.

25. Rām. II.89.23; II.91.9.

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27. Rām. II.91.11; III.12.5.

28. Rām. III.12.17-21.

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इषा वसुमती नाम वसोस्तस्य महात्मनः । एते शैलवराः पञ्च प्रकाशन्ते समन्ततः ।
सुमागधी नदी रम्या मगधान् विश्रुता सयौ । पञ्चानां शैलमुख्यानां मध्येमालिव शोभते ॥'
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86. Dey, N.L., op.cit., p.120.

87. Rigveda. IV.30.20 and II.35.6 respectively.

88. Rigveda, I.53.7; I.58.8; I.131.4, I.166.8; III.15.4; IV.27.1; VII.3.7; VII.15.4 and Taitt. Brā. I.7.7.5; Śat.Brā. III.4.4.3; VI.3.3.25, for details vide, Das,A.C. (1979), op.cit., pp. 186-187.

89. Wheeler, R.E.M., 'Harappa', 1946: 'The Decence and Cemetry in Ancient India, No.3, 1949, pp. 61-74; vide Dube,B. (1967), op.cit., p.146.

90. Rām. II.100.68. The Rāmāyaṇa mentions the term 'Sapta Varga' for the seven limbs of a state i.e. King, minister, country state, Fort, Treasury, Army and Allies.

91. Rām. VII.5.28.

92. Rām. II.100.40.

93. 'नादेय पर्वतं वान्यं कृत्रिमं च चतुर्विधम्।' Rām. VI.3.20.
N.B. Five types of forts seem to have been indirectly referred to the Rāmāyaṇa. II.100.68. i.e. Jaladurga, Pārvata durga, Briksha durga, Iriṇa durga and Dhanva durga.

94. Rām. VII.108.4 and VII.79.16-18 respectively.

95. Rām. I.5.10-13.

96. Rām. VI.3.15 ff.

97. Rām. I.5.6-18; III.48.10-12; V.Canto 2 and 3; VI Canto 3.

98. Rām. IV.9.11-20.

99. Rām. IV.50.7 ff.

100. Rām. IV.51.10-11.

101. Rām. IV.53.26-27.

102. Rām. IV.50.17-20.

103. Rām. IV.52.27-28.

104. 'प्रविवेश गुहां रम्यां किष्किन्धां रामशासनात् ।' Rām. IV.33.1.
'रम्यां रत्नसमाकीर्णां ददर्श महतीं गुहाम् ।' Rām. IV.33.4.

105. Dutt, B.B., op.cit., p.13.

106. Havell, E.B. (1915), 'Ancient and Medieval Architecture' London, p.8, quoted by Dutt, B.B., op.cit., p.11.

CHAPTER - VII

CULTURAL GEOGRAPHY

CULTURAL GEOGRAPHY

The study of man-made geographic features takes account of differences among human communities and these features formulate the special ways of life termed as 'culture'. The cultural geography compares the changing distribution of 'culture areas' with the distribution of other features of the earth's surface in order to identify environmental features. Thus, the cultural geography studies the specific processes in which human manipulations of environment are involved together with their implications for the welfare of the community and humanity[1]. The cultural features of a remote past like the Rāmāyaṇic age give expression to the socio-economic conditions of those times. Unlike the modern complex social order, the Rāmāyaṇic age was environmentally conditioned to a simple pattern and geographic associations of which the conspicuous ones are races, tribes and much more important religion. As such, the present chapter is an attempt to deal with the races and tribes of the Rāmāyaṇic India and present a systematic account of their classification and distribution including the divine and semi-divine races, impact of environment on religion and religious ceremonies.

In the Vedic age, there were two distinct groups of people in India termed as Ārya and Anārya. The history of Aryan settlement is a matter of controversy but it is concluded that the Aryans were autochthonous of Sapta-Sindhu and did not settle there as colonists from any other country[2]. The term Ārya was

appropriated by the settled agriculturists of the Sapta-Sindhu region who were cultured people performing sacrifices. In view of this opinion, the Anāryas (non-Aryans) termed as Asuras, or Rākṣasas or Dāsas were those from amongst the Aryans who in the continued process of hybridization were declared non-Aryans because of their fast losing faith in the Aryan beliefs and practices. This created a conflict among the two groups of the society. The Anāryas were, therefore, considered as persons 'from whom protection was necessary'[3]. 'The Aryans were dolichociphals with straight finely cut nose (leptorrhine) long symmetrically narrow face, broad fore-head, regular features, high facial angle, tall stature, well proportioned body and light, transparent brown colour. The non-Aryan (Dravidians), on the other hand, were also dolichociphals but had broad nose, long fore-head, below medium stature, dark eyes and very dark colour'[4].

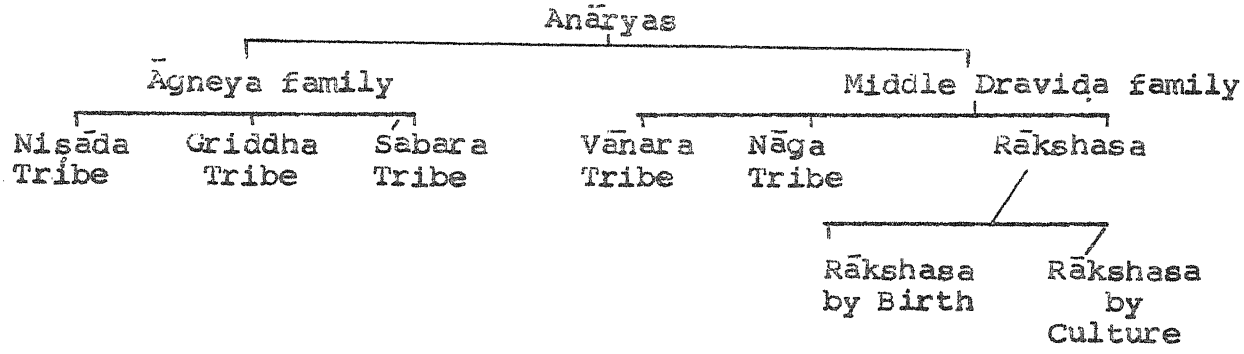
(a) Races and Tribes

(i) Classification of Races and Tribes

By the time of the Rāmāyaṇa ethnological and anthropological concepts and knowledge of the Indians sufficiently had crystalised. We come across large number of tribes both indigenous and foreign and some of the people mentioned are divine and semi-divine. The conception of divinity in the Rāmāyaṇa comprises of all spiritual characters. The divine family includes (a) gods, (b) mythical saints, (c) divine races, (d) evil spirits and (e) divine rivers, mountains, trees, birds etc. As mentioned earlier, the two groups (races) i.e. Ārya and Anārya may be classified as follows:

(i) Ārya - Four-fold division of the society i.e. Brāhmaṇa, Kshatriya, Vaiśya and Śūdra.

(ii) Anārya - They have been classified in the following way[5].



The descriptions in the Rāmāyaṇa distinguish the two groups (races) in many respects.

(i) Nasal Index - In the Rigveda, the non-Aryans are called 'Anāsa'[6] or noseless due to their short and broad nose. The Rākshasas of the Rāmāyaṇa may be compared to the 'Dasyus' of the Rigveda in their breed.

(ii) Complexion - The colour of the above two groups or races may be the measurements of a sound basis of distinction. As opposed to the fair Aryans[7], the non-Aryans were dark-complexioned[8] and even the general constitution of their body was different from that of the Aryans. In the Rāmāyaṇa, the Rākshasas - both men and women are represented as possessing monstrous strength and huge forms. The Rāmāyaṇa generally describes them as mahādaṁṣtra or or Krūradaṁtrinaḥ or tīkshṇa daṁṣtra (possessing long or sharp teeth or big jaws), mahāsya (large mouthed), mahākāya or bhīmakāya (possessing huge body),

bhīmadarśana (of frightful aspect), bhayāvahāḥ (of inspiring terror), and krūrāḥ (cruel)[9]. The poet is sometimes even tempted to exaggerate this distinction and to represent the Rākshasa as possessing limbs of various animals[10]. It may further be added in this connection that the poet generally expresses this ethnical distinction saying that the Āryas were Mānusa where the Anāryas were not[11].

(iii) Food and Drink - From the Vedic age up to the Rāmāyanic age, the Aryans seem to have been very much satisfied with ordinary food, provided by cereals. They used to take meat too. The Anāryas (Rākshasas) on the other hand were very fond of meat and indulged in indiscriminate eating of non-vegetarian dishes[12]. They did not hesitate to eat raw meat[13] and even cannibalism obtained among them[14]. Moreover, the Rākshasas were indulged in wine[15] and women[16]. The food of the Vānaras is repeatedly mentioned to be fruits and roots[17] and they were very fond of madhu (honey) and maireya (an intoxicating drinks)[18]. This differentiated the Aryans from non-Aryans.

(iv) Religious basis - The Aryans were always worshippers of gods and deities and non-religious persons were termed by them as Anāryas. In the Rāmāyana the Rākshasas are mentioned as enemies of sacrifice and ascetic and the poet declares that 'adharma' was the course of the Rākshasas[19]. Risi Kantaka Tapasvikantaka, Devakantaka, Lokakantaka, Brāhmanakantaka, Munighana, Yajñavighnakarī and Kratukriyānām prasamankarāḥ[20] are the most popular epithets of the Rākshasas.

The Social Structure of the Aryans

The concept of Varṇa, as suggested by its literal meaning, originated in the early Rigvedic period as a racial distinction between the fair Āryas and the dark-skinned Anāryas, the Dāsas and the Dasyus. Afterwards, the complexity of life necessitated a further division among the Āryas. Men devoted to learning the priesthood came to be known as the brāhmaṇas; kings, noble men and warriors as the rājanyas (kshatriyas); and the artisans, agriculturists and traders as the vaiśyas. Anāryas who were by this time almost completely subjugated were also included in this scheme as the śūdras. Though, they were placed as the lowest rung of the social ladder as subservient to the Āryas[21]. The four-fold division of the society i.e. brāhmaṇas, kshatriyas, vaiśyas and śūdras had become fully established by the time of the Rāmāyaṇa[22]. It appears that in the epic age varṇa was to be determined by karma (action) and not by janma (birth)[23]. However, heredity was actually the main principle in determining the varṇa of an individual. The rights and privileges of the different varṇas had been distinctly laid down and members belonging to a particular varṇa were expected to follow the course applicable to their own varṇa. The poet has laid emphasis on the fact that all the varṇas living at Ayodhyā, were intent upon performing the duties prescribed for their own varṇa[24]. The Rāmāyaṇa also depicts very cordial relations subsisting among the different varṇas. It is said that at Ayodhyā, all the varṇas lived in perfect amity. The kshatriyas were obedient to the brāhmaṇas; the vaiśyas were

devoted to the kshatriyas and the śūdras lived there doing ungrudging service to the three high varṇas[25].

The Brāhmaṇas

The Brāhmaṇas of the Rāmāyaṇic age stood at the head of the varṇa scheme as - men dedicated to learning, vericity, tranquillity and austerity[26] - in fact to every thing that was good and righteous[27]. The study of the Vedas was their primary concern and they considered them to be their supreme treasure[28]. The Rāmāyaṇa generally speaks about the Brāhmaṇas as "proficient in the Veda and its auxiliaries[29]. Besides the Vedas and other scriptures, the Brāhmaṇas studied other subjects (śāstras) of practical utility also, e.g. politics, logic, religion, grammar, music, dance, astronomy etc.[30].

The Brāhmaṇas of the epic age applied themselves in the performance of sacrifices and daily agnihotra. The yajña and adhyayana (study) were the two main duties of a Brāhmaṇa[31] and at Ayodhyā, there was not a single Brāhmaṇa who did not maintain the sacrificial fire and perform yajña[32]. Tapas was also intimately associated with the Brāhmaṇas[33] for complete self restraint. Moreover, the Rāmāyaṇa also recommends three more duties for the Brāhmaṇas i.e. teaching the Vedas, officiating the sacrifices, coronations and other ceremonies like birth and marriage and receiving gifts[34]. In fact, the latter was the peculiar privilege of the Brāhmaṇas to serve as their principal means of livelihood. It must be added here, that in certain cases, the Brāhmaṇas accepted State service also. A number of

Brāhmaṇas constituted the mantri-pariṣada of the king in Ayodhyā[35]. There was a Brāhmaṇa purohita in every kingdom, who was also the king's Chief Counsellor[36] and enjoyed very wide powers and high position[37]. The Brāhmaṇas of the Rāmāyaṇic age were universally regarded as Varṇeṣvagyra (best among the varṇas) and as the prime cause of a man's well-being[38]. The kshatriya kings and princes cherished their friendship and took pride in doing them service[39]. In times of a national emergency or any other crisis a king sought the guidance of renowned Brāhmaṇas[40].

In consideration of their austere life and the selfless services rendered to itself, the society granted the Brāhmaṇas a few privileges. The property of a Brāhmaṇa was considered inviolable and it was free of state taxation[41] and any person (be a prince) who unlawfully seized it or caused damage to it, was severely punished by the king[42]. Similarly, no corporal punishment could be given to a Brāhmaṇa and under no circumstance he could be killed[43]. Brahma-hatyā was one of the most grievous sins which degraded not only men[44] but also gods like Indra[45].

The Kshatriyas

The status of the kshatriyas in the society was next to that of Brāhmaṇas. The primary duty of the kshatriyas was to protect the weak and oppressed persons. It was considered that the king, his kingdom and his very life were for the service of the Brāhmaṇas[46]. They were believed to bear bows (weapons) only to see that the word ārta (distressed) did not exist on the

earth[47]. Thus, only kshatriyas were considered fit to become rulers[48] and in that capacity they had to ensure a free and due observance of dharma by every one in the society[49]. The cow and the Brāhmaṇa were symbolic of Aryan culture and their protection was the main theme of a kshatriya prince[50]. Performance of sacrifices was indispensable to a kshatriya king for welfare of the state[51] and it served dual purpose. On one hand, it brought merit to the performer and, on the other, it paid livelihood to the Brāhmaṇas who, depended mainly on the gifts or alms given to them by other varṇas.

The Vaiśyas

The Rāmāyaṇa is a primarily a Kāvya of the Brāhmaṇas and the Kshatriyas and references to vaiśyas are comparatively very meagre. It appears that the vaiśyas are often mentioned just to fulfil the list of the varṇas. However, by gleaning information dispersed relaxing in the epic, it becomes clear that they belonged to a community engaged in trade, agriculture and cattle-rearing[52]. In the description of the city, the poet has referred to the markets and shops of the vaṇig-jana laden with merchandise[53]. Besides, he has also mentioned their organisations i.e. nigama and Śreṇīs also[54]. It is note worthy that not a single name belonging to this varṇa has been mentioned by the poet in the epic.

The Śūdras

The Śūdras were the last in the varṇa order. They served the higher three varṇas in various capacities such as,

attendants, carpenters, washermen, barbers, masseurers etc[55]. The Āryas had withheld them from the privilege of Vedic study because they originally belonged to a different racial group. There is not even a single example of hatred or contempt being cherished by the higher varṇas towards the Śūdra. As we have already mentioned that Śūdras were living in perfect amity with the rest of the people in Ayodhyā and they were invited alongwith the other three varṇas in the sacrifices performed by the kings[56].

The caṇḍālas were the most degraded among the Śūdras and they lived away from the habitation and were untouchables[57]. Their presence at the sacrificial altar was considered defiling[58]. They dressed themselves in black lower garments and put on ornaments of iron[59]. It is not clear in the Rāmāyaṇa, whether the caṇḍālas were such by birth or were a class formed of those people of the higher varṇas who were degraded to this position due to the evil karma. The word patita (fallen) makes it evident that a member of the higher varṇa being deprived of his privileges, could be relegated to a lower position and even ascertained as one among the Śūdras[60].

The description of the dāsas in the Rāmāyaṇa, is also necessary to point out here. It is notable that the words dāsa and dāsī[61] inform us about the institution of slavery. The poet has mentioned bhrityas and dāsas[62] to indicate their status and we may infer that bhrityas were ordinary servants where as dāsas were slaves. The palaces of the kings, queens and princes were ordinarily crowded with dāsīs and the practice of giving dāsīs

as gifts[63] seems to have been very popular in the Rāmāyaṇic age.

In addition to the people of the four varṇas explained above, the Rāmāyaṇa refers to Ābhīra, Mlecchas, Kirāta, Yavana, Cīnas, Pahlavas and Śakas as foreign tribes[64]. Niṣādas, Sūtas, Māgadhas, Bandinas[65] are also mentioned as indigenous. In the Dharma Śāstras these are described as ramifications of the primary four varṇas caused mainly by inter-caste marriages and also in some cases by following a particular occupation[66]. In this connection, we may point out that there were no rigid restrictions regarding the inter-caste marriages in the Rāmāyaṇic society and no attempt has been by the poet to explain the existence of Cīnas, Yavanas, Pahlavas, Śakas etc. as the off-shoots of the four varṇas based on cross-marriages among themselves.

The Anāryas

The Anāryas of the south were also human beings and we can gather ample information from the Rāmāyaṇa regarding their social, political and religious life. In this connection it may be noted that Yakshas, Gandharvas, Nāgas, Siddhas and Cāraṇas, originally represented human races but in the Rāmāyaṇa they are mentioned completely in a mythical character and accordingly their accounts will be given in the second part of this chapter. We have also left out the Gridhras because from the references we know nothing significant except that they were nomadic people friendly to the Aryans. Gridhra might have been their totem. Thus, we have limited ourselves to the Rākshasas and Vānaras which were most important from the above point of view.

According to the Rāmāyaṇa, there are two categories of the Rākshasas, namely (i) Rākshasas by birth and (ii) Rākshasas by culture[67]. Rākshasahood, with which is identified ferocity and dreadfulness, descends upon the members of the second category as a punishment for some serious crime[68]. Thus, Virādha and Kabandha had to embrace Rākshasahood because they roused by their misconduct the anger of august person and thereby invited their curse. Thus, they obtained certain peculiarities such as greater power, greater savagery and even greater hideousness[69]. They were outcasted from the society and lived in their own isolated life, without being the members of any social group and their character has been represented as mythical beings.

Besides, the Rākshasas belonging to the first category, were essentially human beings[70] and the poet has described well, the culture and achievements of the hostile people[71]. The origin of the Rākshasas is to be traced to Sālakaṭaṅkaṭā. Besides, the Rāmāyaṇa also offers a mythical account of the origin of the Rākshasas[72]. The Rākshasas can be distinguished from the Aryans in the 'matrilineal character' of their family life[73].

The Rākshasas of the Rāmāyaṇic age were not only a mighty political power but also in respect of material prosperity, they were the most advanced people of their times. In the description of the city Laṅkā it is said that it was made up of gold and was full of various metals and precious stones. Power and wealth naturally tended the promotion of various types of arts among them. The poet has painted a very graphic picture of the dance, music, painting and śālā of Rāvaṇa's harem[74]. The

varieties of drinks, viands, citrasālā (art galleries), krīḍā-gṛiha (sport pavillions), kāmagṛiha (house of sexual delights), divāgṛiha (diurnal pleasure house), latāgṛiha (bowers) and niṣkuṭa (pleasure groves)[75]. Besides, the description of the royal garden of exquisite charm[76] are convincing proofs of the fact that they were not just the barbarians but appear before us as a highly civilised race who had secured for themselves the choicest pleasure of life by their efforts.

Next, the Vānaras were important in ancient India and they were so primitive that the poet has described them as monkeys. But they were actual human beings which can be shown from the fact that practically all the salient features of Aryan culture are associated with them and their religion. Thus, the Rāmāyaṇa refers to the 'aurdhva dehikam' or 'pretakārya' (cremation) of Bāli almost on the same lines as of Daśaratha making reference to the Śibikā, Citā, circumambulation of the Citā by the Aṅgada and other relatives, the Udakakriyā and the 'aśauca' (the period of impurity) after the actual cremation[77]. The epic also mentions Sugrīva's coronation in Aryan style. In this account, there is a reference to homa in course of which mantravida dvijas are said to have offered haviḥ purified by mantras into the well-kindled fire of the altar. The articles which were required on this ceremony were, akshata, lājā, priyaṅgu, madhu, sarpiṣī, dadhi and holy water from the rivers and seas in addition to herbs, flowers, sprouts of various kinds and manifold fragrant substances. On this occasion, liberal gifts i.e. jewels and raiments as well as edibles of various

kinds were distributed among the dvijarsabhas[78]. Moreover, Tārā, desirous of her husband's success in the combat performed the svastyayana for him duly reciting the mantras[79]. It is said that Hanumāna prayed to Sūrya, Mahendra and other gods, obviously to crave their blessings for success in his business[80]. Bāli, the king of the Vānaras, is said to have performed the Sandhyā every day before sunrise and also muttered the naigama mantras[81]. It may be also pointed out that the Vānaras in their mutual behaviour were extremely polite and affable[82].

It is to be remembered that there is also another side of the Vānara-picture which clearly reveals the contrast as shown above. For referring to these people, the poet has mentioned the various synonyms of Vānara such as hari, lāṅgūla, plavaṅgama, kapi, śākhāmṛigendra, vanavāsī, vanaukasa and drumavāsī[83] and he undoubtedly likens these people in their features and nature to the monkeys. He mentions them as brown in complexsion[84], having long hair all over body[85], and does not forget to refer their long tail[86]. In combat with Rākshasas, they employed their natural weapons, viz. the arms, the feet, the nails, the teeth and the very weight of their body[87] and in this respect they are termed as Tīkshnadaṁstra nakhāyudhāḥ[88]. The cry of the Vānaras is expressed by the poet as Kilakilā[89] and when they are filled with joy, they are described as beating their arms, kissing their tail, jumping and shouting[90]. The outstanding characteristics of their nature are stated as asthiracittatā and laghucittatā[91] (fickle-mindedness).

A few more facts about the Vānaras may be deemed to recount their status.

(i) The food of the Vānaras is repeatedly mentioned to be fruits and roots[92] and they were fond of madhu and maireya[93] (an intoxicating drink). No where does the poet mention to agriculture or cattle rearing with reference to the Vānaras.

(ii) Undoubtedly, there are references to the dress of the Vānaras men and women[94] - but at the same time there are few passages which indicate that Vānaras remained nude[95]. It appears that their dress was not only simple but elementary - consisting of one upper and one lower garment.

(iii) Besides Kiṣkindhā, no other town has been mentioned as the capital city or Janapada and they were mainly the inhabitants of either forests or river banks.

(iv) The sex relations of the Vānaras were extremely loose - verging almost on promiscuity[96].

Clearly, the Rāmāyaṇa furnishes two opposite pictures of the Vānaras and to determine their exact position between two extremes is indeed a difficult task. Vyas[97] believes that by the time of Rāma, the Vānaras had completely adopted the Aryan culture. We, however, find it difficult to subscribe to such a view, for the gulf between the primitive stage in which the Vānaras actually appear to be and the highly cultured stage represented by the Aryans of Vālmīki's times is very wide. It becomes clear from the above facts that in the Rāmāyaṇic age,

the Vānaras were a primitive people perhaps still emerging from a nomadic state. In comparison to the Āryas and Rākshasas, the Vānaras were backward both materially and culturally.

In connection with the origin of the Vānaras, the poet has no clear idea and he generally calls them as the sons of the Devas and the Gandharvas[98]. The poet also refers independent stories to explain the birth of individual Vānara heroes, from different gods[99]. The poet refers to the three classes of these people termed as Vānaras, Rikshas and Golāṅgūlas[100]. Sometimes, he points out certain differences to make distinction in their complexion and features[101], but more often he alludes to them collectively by the common term 'Vānara'. In the absence of dependable internal evidence, various scholars have made fanciful conjectures, regarding the identity of these people. Ray[102] recognizes these Vānaras with the "Vrātyas of the first migration, who had taken to the fresh fields and pastures new of the Deccan on the advent of the Aryans of the second migration....". Vaidya[103] is of the opinion that Vānaras were the aborigines of the south who were "called by that name from their monkeyish appearance..... They were also like monkeys active, ferocious and given up to pleasure....." According to Bulche[104], the Vānaras were the aborigines of the Vindhyas and opines that the name Vānara was given to them either because 'monkey' was their insignia or their totem. In our opinion as the poet describes in vivid colour the manners, customs, food and drinks and the royal family of Kiṣkindhā, the Vānaras were in the contact of neighbouring Aryans but most of them were the wild mountainous tribes.

(ii) Distribution of the Races and Tribes

The Indian subcontinent together with some parts of central Asia was divided into two divisions, viz. Āryāvarta (Northern) and Dakshinapatha (Southern). The northern division was subdivided into four territories, i.e. Madhyadeśa (central region), Prācya (eastern region), Pratīcya (western region) and Udīcya (northern region). For a long time the Dakshinapatha remained almost isolated from the Āryāvarta and aboriginal tribes continued their sway on the part of the country. As we have mentioned earlier that Āryas and Anāryas were original inhabitants of Sapta-Sindhu and the theory of their having been immigrants from Central Asia, is more fanciful than real.

The Aryans

In the Rāmāyanic age, we find that the whole part of the Āryāvarta was under the control of Aryan kings (Fig.7.1). The Rāmāyaṇa mentions that the Dravida, Sindhu, Sauvīra, Saurāstra, Vaṅga, Aṅga, Magadha, Matsya, Kāśī, Kosal and Dakshinapatha were under the suzerainty of Daśaratha, the king of the Kosala[105] and he invited all the rulers of the above mentioned Janapadas in a Yajña[106]. The Royal court of Ayodhyā is described in the epic, as being attended to by subordinate kings to pay their tribute to Daśaratha[107]. Moreover, Rāma affirmed that the entire earth with its mountains and forests belonged to the Ikshvākus[108]. However, from the above references, any impression regarding the universal authority of the Ayodhyan princes does not create and it should also be remembered that

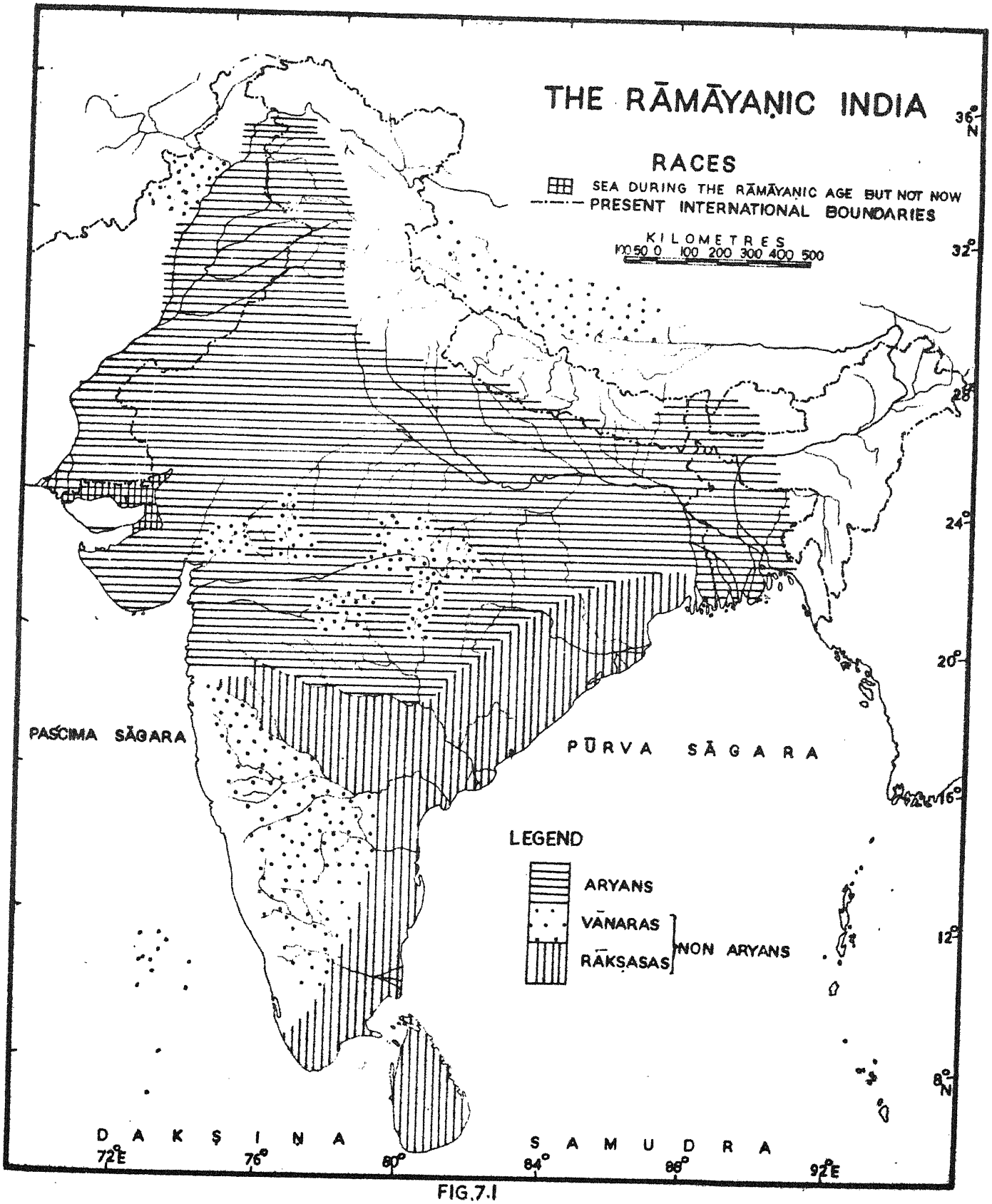

THE RĀMĀYAṆIC INDIA
RACES
SEA DURING THE RĀMĀYAṆIC AGE BUT NOT NOW
PRESENT INTERNATIONAL BOUNDARIES
KILOMETRES
100 50 0 100 200 300 400 500
36° N
32°
28°
24°
20°
16°
12°
8° N
PAŚCIMA SĀGARA
PŪRVA SĀGARA
LEGEND
ARYANS
VĀNARAS
RĀKṢASAS
NON ARYANS
D A K Ṣ I Ṇ A
S A M U D R A
72° E
76°
80°
84°
88°
92° E

FIG.7.1

the independent Videha and Kekaya kingdoms existed to the east and north-west respectively. The military expeditions sent by Rāma against Lavaṇa and the Gandharvas, under the leadership of Śatrughna and Bharata respectively also relate the same story. Bāli, the Vānara king, accused Rāma for unlawfully interfering in the affairs of his country[109]. Thus, from the above references, we come to the conclusion that entire regions of the Āryāvarta were inhabited by Aryan races and tribes and they were confined to a territory covering the rich plains of Indus and its tributaries extending to the east up to the Puṇḍra and Vaṅga Janpadas respectively. The Southern limit of the Aryan territory was Vindhya ranges and according to the Rāmāyaṇa, Agastya was the first Aryan to the cross the Vindhyas and penetrated in to the south. Agastya āśrama was situated two yojanas (14 miles) distance from Pancavaṭi[110], and the latter is identified with modern Nasik. The Aryan colonization of the Peninsular India must have been occurred thousands years before the reign of Rāma.

From the above facts, it may be inferred that the Aryan territory during the Rāmāyaṇic age extended roughly between the 20° to 30° North latitudes and from 67° to 90° East longitudes. This covered the following political units of the modern Asia, the eastern Afghanistan, North-west frontier provinces and middle parts of the Pakistan, Jammu and Kashmir, Punjab, Haryana, Himachal Pradesh, Rajasthan, Gujarat, Uttar Pradesh, Bihar, West Bengal, Madhya Pradesh excluding the districts of Bastar and Durga and the northern part of the Maharashtra. In the north, the Himalayan ranges from west to east and thick forests were

the most effective geographical factors which discouraged the Aryan expansion beyond the above limit. The peninsular India was not so much attractive as the Āryāvarta, because of high relief thickly forested and unsuitable soils for agriculture. Some of nomadic Aryan tribes are also mentioned in the epic in which Garudas were the important. The Rāmāyaṇa mentions that Jatāyu, the king of the birds, as an ally of king Daśaratha of Kosala, reigned in Southern India near Janasthāna. Sampāti, the brother of Jatāyu, also reigned at this time at the southern-most point of the Indian Peninsula near the sea shore. The exact position of their territory is not mentioned in the Rāmāyaṇa.

Many Aryans, who were degraded, were driven out from the Āryāvarta and lived on the mountains of the western frontier, used Aryan language or its currupted forms, known as Mleccha.

The Anāryas

It appears that a branch of Aryan race, which was inimical to another on account of difference of religious opinions was termed as the Anārya. From the Vedic literature it becomes clear that the 'Anāryas were living in Sapta-Sindhu from the earliest times in the primitive stage of development. They neither worshipped the gods of the cultured classes nor performed the sacrifices and were, therefore, hated by the Aryans. They proved such pests by their evil and wicked ways, unclean habits and criminal propensities that a systematic organization was made to extirpate and expel them from Sapta-Sindhu[111]. Gradually, they moved southwards and established

their suzerainty in the Peninsular India. In the Anāryas, the most important tribes were the Vānaras and the Rākshasas.

The Vānaras lived in Kiṣkindhā and undoubtedly belonged to the Dravidian race. Kiṣkindhā janapada was prosperous at the time of Bāli and was extended between the Bhima river to the Kaveri river. Besides Kiṣkindhā, the other regions were also inhabited by the Vānaras. In this connection, it should be remembered that Sugrīva is said to have summoned all the chiefs who ruled over the Vānara and the kindred races from even the height of the Kailāsa and Himalayan ranges. The Vindhya, Anjana, Mahendra, Mandarācala, Pancaśaila, Mahāśaila, Meru, Dhūmragiri, Mahāruṇa, the Eastern and Western mountains where the sun rises and sets, seashore, forests, various mountains and the banks of the rivers were also the main inhabited areas of the Vānaras[112]. Thus, it becomes clear that Vānaras territory was limited in small patches in the southern India and they were inhabited in rabbles in different mountainous and forested regions of the world.

The early historical accounts of the Rākshasas in the Rāmāyaṇa are scanty and not very trustworthy. If the Uttara Kāṇḍa is to be relied upon, the original home of the Rākshasas would appear to be the southern seacoast[113] from where they moved in hoary past to the Laṅkā fort and settled there as an independent political power[114]. If we observe other Kāṇḍas of the epic, it becomes almost certain that having earlier suffered a few vicissitudes in their political life, they had emerged in contemporary history as a mighty power. Rāvaṇa, who was a

strong and capable leader of the Rākshasas, with his followers not only reclaimed old possessions but also entered into alliance with strong and powerful neighbours - the Vānaras and had made extremely secure position. Moreover, he established a military post in Daṇḍakāraṇya and slowly tried to penetrate further into the north[115].

Rāvaṇa was the most powerful king of the south. He was designated as Daśamukha (ten faced) or Daśa-mauli (ten crowned). It appears that the poet has used these epithets in a metaphorical sense and simply meant that Rāvaṇa had occupied the ten Janpadas of the south and south-eastern India i.e. Utkala, Daśārṇa, Kaliṅga, Kauśika, Daṇḍaka, Āndhra, Puṇḍra, Cola, Pāṇḍya and Kerala and he wore ten crowns or ten-headed crowns as token of his vaunted conquests in the above mentioned janapadas and his paramount power. Thus, it is evident that the Rākshasas occupied mostly the southern part of India and establishing their colonies in above janpadas, they gradually penetrated to the north.

(iii) Census

In the Rāmāyaṇic age, the practice of an official counting of the people (census) was very much in use. The Rāmāyaṇa mentions the numbers one to ten and the decimal methods were known. The terms for higher numbers were Śata, Sahastra, Ayuta, Śata-Sahastra, Niyuta, Koṭi or Arbuda, Saṅku Maha-saṅku, Vṛinda, Mahā-vṛinda, Padma, Mahā-padma, Kharva, Mahā-kharva, Samudra, Ogha and Mahaugha[116]. In this account it is to be remembered

that the poet has not mentioned the total number of Aryans. He has only referred to the total number of the Vānaras inhabiting the different regions of India and the Rākshasas who lived at Janasthāna and Laṅkā. According to the description[117], the total number of the Vānaras in Rāma's army was 10^{341}. The poet also refers to individual Vānaras' leaders along with their total soldiers of different regions[118]. It is said that thirty two crores Rākshasas, barring the infants and aged ones, were in the kingdom of Rāvana[119]. In Janasthāna, there were fourteen thousand Rākshasas who were killed by Rāma[120]. Besides the total population of the Vānaras and Rākshasas, the epic mentions that in the western part of the country, i.e. Gāndhāra Janapada, three crore Gandharvas inhabited there[121].

(b) Religion and Environment

(i) Impact of environment on Religion

The core of religion is determined by the physical environment of the region where a particular religion evolves. It is a prerogative of the Indians to assert a remote antiquity of their religion. The religion varies from man to man, place to place and from time to time and thus, the present Hindu religion has endured considerable modifications in course of time, still reflects the basic concepts of the Āryas and Anāryas[122].

Religion is the product of physical environment which imperceptibly wields its great influence on man's activities. When man appeared on the earth, he was oppressed by invisible natural forces and surface features of the earth because in

nature's crucible countless forces are always at work. And nothing is more profoundly affected by these forces than the man who knows how to use them for his own ends, to accept their suggestions and model upon them his habits and modes of life. Climate is much influential not only because of its extremes but also of its general character. Besides, topography, soil and other surface features as well as contacts between land and water exert their influences on man. Thus, the man developed a sense of awe for such natural forces. Hence,man worships the natural forces supposing them divine or supernatural.

Chronologically speaking, the rise of epics comes in the Sanskrit literature at the close of the Vedic period. The Rāmāyanic people looked into nature and gave a picturesque expression to all natural phenomena. They saw the effect of the sun as the ruler of the worlds, the source of the seasons, the nourisher, the cause of the creation, preservation and destruction of the universe, roaring winds and clouds, abundant vegetation, the tranquil majesty of the mountains, generosity of mighty rivers and other natural elements which attracted the attention of the people so deeply that the religion was intimately bound up with the natural forces. 'Fundamentally, religion is formed by the conception of supreme power and its worship. It may be a personification of human being or of a natural force'[123]. The latter case invariably holds good. Worship may be ritualistic or non-ritualistic. In the former condition, the man needs a number of accessories which are directly derived from the environment where as in the latter case, worship is

based upon recitation of prayers which is totally associated with man's imagination influenced by physical and cultural elements of the region. The religion of the Rāmāyanic age was direct bequest from the Vedic period at it was totally a nature worship which was rendered with details of ritual activities. Hence, the environment had double control over the Rāmāyanic religion: first , the gods were the personifications of natural forces which were associated with physical environment, and secondly, all sacrificial material was derived from the environment.

(ii) Classification of Gods

We may classify the gods, spiritual characters in the following categories:

(i) The Terrestrial Gods

(a) The earth, fire, rivers, mountains, trees, animals and birds.

(b) Divine races and saints.

(ii) Extra-Terrestrial Gods

Among the extra-terrestrial gods, four distinct groups may be traced namely:

(a) Vedic gods like Soma, Vishnu, Kubera, Āditya, Vāyu, Indra, Agni, etc. who, though originally representative of the various phenomena of nature, had this character obscured due to the tendency of anthropomorphism;

(b) deified abstractions like Dhṛiti, Smṛiti, Medhā, Srī, Hrī, Kānti etc.;

(c) comparatively modern gods like Diśāḥ, Vidiśāḥ, Māsāḥ, Saṁvatsarāḥ, Vedāḥ, Mantrāḥ etc. who like the earlier Vedic gods were products of animism and naturism; and

(d) Gods like the Griha-devatā, Āśrama-devatā and Vana-devatā who enjoy the term devatā but do not share the characteristics of the supernal Devas"[124].

The Terrestrial gods and Goddesses as Regional Features

The terrestrial gods are mostly the representation of topographical features and animals. The ancient Indians had very early realised the importance of the earth surface in their life. They raised the earth to the position of deity. The Earth is the Great mother, the Broad Goddess, Pṛithivī, the mother of all created things. The earth is constantly personified not only as drinking blood, but also as approving as priests and as typical as patient endurance (क्षमया पृथिवी समः[125]. As nurse of all, Earth is helper, medinī provides wealth, being herself wealthy, Vasumatī, and rejoices to give corn to a generous man[126]. She acted as witness of innocence[127] and termed as Dharaṇī devī or Mādhavī devī (as wife of Vishṇu-Mādhava)[128]. As the divine sun is afflicted by eclipse, so, 'divine mother Earth' is afflicted by earthquakes[129] due to the same cause that produces untoward lightning or rain or to the shaking of the world-elephant's head[130]. The location of the 'navel of the earth' at a place in the Himalayas seen by Hanumāna, introduces an old conception in more precise form[131].

It is but natural to expect that an age which insisted on daily agnihotra and entrusted special sacrificial sessions should regard Agni in great esteem. In the Rāmāyaṇa, Agni retains several of his earlier epithets like pāvaka (purifier), Citrabhānu and Vibhāvasu (shining with light), havyavāha (oblation carrier) and araṇisuta (son of araṇis)[132]. In the Rigvedic times, he was the lord of the house (grihapati), the favourite guest (atithi) and the esteemed priest (ṛitvik). But in the epic age that intimacy is missing and in the Rāmāyaṇa, Agni as a god is mere prominent in his role of a witness of the world (loka-sākshī)[133] in marriages and alliances[134]. The Rāmāyaṇa mentions that fires are three (viz. Dakshiṇa, Gārhapatya and Āhvanīya)[135] and Agni's seat is the Vedi (altar) in the agnyāgāra, agniśālā (the fire chamber)[136] where he dwells feeding himself on the havya (sacrificial offerings)[137]. Thus, it becomes clear that Aryans worshipped fire due to its heat, they cleared the forests with fire and obtained new agricultural land and destroyed non-Aryans' settlements. Agni functioned as a mediator between man and gods during the Rāmāyaṇic age.

The river banks were the main inhabited areas in ancient India due to abundance of water and soil's fertility. The rivers influenced the Aryan's life and so they believed them to be the forces of good possessing power to bless and confer boons and hence deserving worship. In the Vedic period Sarasvatī and Sindhu were considered as holy rivers because in early Vedic period, banks of these rivers were noted for the Aryans concentrations[138]. But in the Rāmāyaṇic age, when Aryans occupied

the whole northern and eastern part of India, they gradually confined themselves with Gaṅgā, Yamunā and Sarayū, and Sarasvatī in this period became the goddess of speech and learning[139]. In the epic age, rivers were invoked to grant wishes[140]. The confluence was considered extremely holy and Bharata paid his respects to Prayāga the meeting place of Gaṅgā and Yamunā[141] and so did Rāma and Lakshmaṇa to the confluence of Saryū and Jāhnavī[142]. Rivers are said the daughters of mountains and wives of the ocean. Thus, Gaṅgā is frequently spoken of as the daughter of Himālaya[143] and the queen of Samudra[144].

The personification of the ocean serves as an ideal serenity[145] and as an ideal dwelling place for the Nāgas, the Asuras and the Daityas. The ocean is called Sāgara after the name of Sagara (ruler)[146], whose sixty thousand sons enlarged him in their attempt to search the missing sacrificial horse. The ocean is usually the abode of Varuṇa[147] and its water was considered holy and was specially propitious in a king's coronation[148]. Rāma besought Sāgara for granting passage to him and the Vānara party, but the latter exihibited no inclination towards fullfilling that request because just as the elements (earth, air, ether, water and light) remain fixed their nature, abiding by the ethernal law, so also it was the nature of Samudra to be unfathomable[149].

The mountains are said as the home of various divinities and their rendezvous. They are also the symbol of firmness[150] and hugeness. The Meru and Kailāsa are termed as the 'abodes of the gods'[151] whereas Himālaya, Citrakūṭa, and Mahendra[152]

are said as the habitat of the Kinnaras, Vidyādharas, Guhyakas, Siddhas and cāraṇas. Mandara mountain is believed to have been employed as the churning rod by the gods[153]. Among the mountains, Himavāna is the most important one from the point of its personification. He is the lord of mountains[154], father-in-law of Śaṅkara[155] and has two daughters - Gaṅgā and Umā[156]. These mountains sometimes speak like human beings[157]. It is said that in the Satyayuga, they had wings and could fly like birds. The sight of the floating mountains inspired great panic in the heart of the people and so Indra lopped off their wings by his thunderbolt[158].

Like gods and men who are children of the Prajāpati Kaśyapa all the birds and animals are also believed to have their origin from the same Prajāpati directly or indirectly. The Rāmāyaṇa mentions the divine cow named Surabhī, who is the mother of the bullocks[159] and as Kāmadhenu, she is identified with Śabalā, the wonder-cow of Vaśiṣṭha, who was capable of fullfilling all desires[160]. The divinity of the cow rests on the element in totemism which consists in the deification of that class of animals which provides a livelihood. The ancient Indians naturally, were pastorals and recognised its heards as its means of life and regarded them as sacred parents.

Divine elephants are mythological guardians of the quarters. They are called diggajas, diśāgajas and diśāpālas and were four in number named Virūpākṣha, Mahāpadma, Saumanasa and Bhadra[161]. In addition to these, there are also Sārvabhauma, the elephant of Kubera and Airāvata of Indra[162]. The horse

Uccaihśravā, who sprang from the ocean at the time of churning of the ocean, also belongs to Indra[163].

Among birds Garuda is noteworthy. He is variously known as Vainteya, garutmat, the winged suparṇa, of lovely wings tārkshya, pakshirāja and dvijendra[164]. He is renowned for his great speed and ranges in the sky like a meteor throwing clouds topsyturvy[165]. He is the vehicle of Vishnu and robber of ambrosia[166]. He frightened away the snake-arrow of Indrajīta and cured Rāma and Lakshamaṇa in the war[167].

The mythical trees mentioned in the Rāmāyaṇa are few. There are single reference to the śālmalī, having thorns of iron, covered under golden flowers and leaves of excellent cat's-eye gems[168] and the Nyagrodha (banyan tree) on the sea-coast having branches extended up to a hundred yojana on each side[169]. Besides, Śyāma Vaṭa at Prayāga is specially mentioned in the epic which was capable of fullfilling the heart's desire[170]. It may also be added that many trees were considered holy from association with the gods. In these, bilva, khadirā, palāśa, śleṣmātaka, deodāra, plaksha and cane were most important and were used in various sacrifical ceremonies[171].

Divine Races

Associated with the Devas and sharing most of their traits are hosts of charitable beings like the Yakshas, Kinnaras, Apsarās, Guhyakas, Bhūtas, Vidyādharas, Nāgas (Pannagas and Uragas)[172] Gandharvas and Patagas (or Pataṅgas). Out of these, no detail is available in the epic about the Patagas except that

they generally appear in conjuction with the Uragas in the lists of other divinities[173]. Yakshas are said the attendants of Kubera and live with him on the Kailāsa mountain[174] and they can also be seen on Agastya āśrama and Mahendra[175] and even in air with Devas and Gandharvas[176]. Like Yakshasas, the Kinnaras also bear close relationship to the mountainous regions. The Maināka and Himavāna are described as being frequented by hosts of Kinnaras and they can be seen with their female partners, sporting on Citrakūta mountains[177]. The Apsarās are divine courtezans and experts in the arts of dance, music and amorous sports[178]. The Guhyakas are a group allied with the Yakshas as attendants of Kubera were lived on Kailāsa[179]. References to the Bhūtas are vague in the Rāmāyaṇa. In some passages, they are mentioned along with various semi-divine races[180] whereas in other passages they may be understood for general rather than for a separate group[181]. The Vidyādharas are repositories of great wisdom[182]. The Rāmāyaṇa locates their home in the mountains[183]. The Nāgas who are described as like gods[184], were the children of Surasā (Nāgamātā)[185] and the Bhogavatī town in Pātāla was guarded by the Nāgas[186]. The Rāmāyaṇa is silent about the early history of the Gandharvas. They appear to be the closest companions of the Devas not only in the witnessing of a combat or a marvel, in greeting a hero, in attending a festival but also in sacrifices where the gods assemble to receive their share of the oblations[187]. The resort of the Gandharvas appears to be on the mountains and they are represented as the guardians of plants[188].

In the Rāmāyaṇa the mythical saints who are indiscriminately called Risis, Maharsis, Paramarsis, Brahmarsis, Munis, Siddhas, and Cāraṇas[189] are described as flocking in the sky to witness a combat, competition or any other happening on the earth. This class of saints is a miscellaneous one being comprised on the one hand of individual sages like Durvāsā and Nārada and on the other of groups like that of [190]:

(i) Siddhas, Sādhyas and Cāraṇas who possess no distinct individuality except what can be gathered from their nomenclature;

(ii) Bālakhilyas, which is a group of sages possessing a certain distinct individuality in the sense that they are always described as anchorites (Vaikhānasas) and as drinkers of the sun's rays (marīcipāḥ)[191] and

(iii) The personifications of the stars and constellations, prominent among them being the Saptarsis[192] - the seven Risis (Marīci, Aṅgirā, Atri, Pulastya, Pulaha, Kratu and Vasiṣṭha) who are personifications of the seven stars of the constellation Ursa Major. Of these some are referred to in the epic as stars and also as individual characters[193].

From the various groups, we come to the conclusion that a risi is, 'an inspired person (human or divine) possessing a glorious pious record which enables him to be invested with certain divine traits such as supernal vision, the power to bless and curse, the power to fly in the air, free access to

the spheres of the gods and the like[194]. It is difficult as well as unnecessary to speak about the saints because their number is very large.

Extra-Terrestrial Gods

The Rāmāyaṇa mentions traditionally the number of gods as thirty three (eleven Rudras, twelve Ādityas, eight Vasus and two Aśvins)[195] but actually they are innumerable. So, we will, therefore, content ourselves for the present with some important gods associated with nature. Indra retains the title devarāja but in prominence he has already yielded to Brahmā and Viṣṇu (sometimes to Śiva also). The lokapālas i.e. Indra, Varuṇa, Kubera and Yama, the guardians of the four directions respectively, have greater respect than the others but in his own sphere a particular god is supereminent. Thus, soma is noted for his gentleness and the quality of pleasing to all; Āditya for his glorious lustre; Viṣṇu for his prowess; Kandarpa for his beauty[196], Vasudhā for her forbearance; Indra for his valour and invincibility; Brihaspati for his wisdom and eloquence[197], Aśvins for their grace and ideal brotherhood; Vāyu for his strength and velocity; Kubera for his wealth and generosity; Mṛityu for his wrath and Brahmā for his fortitude and equanimity[198].

Brahmā

The Rāmāyaṇic Brahmā stands midway between the neuter brahman, the universal power of the early Vedic period and representing the force of creation in the later trinity. The

Rāmāyaṇa informs us that Brahmā and Viṣṇu - both are the leaders of the gods - the former plans for them[199] and the latter executes the plans. Brahmā is mainly associated with his function i.e. creation[200], so he is popular as Viśvakṛit and Lokakartā[201]. His several other epithets such as pitāmaha, lokapitāmaha, lokaguru and prajāpati[202] also point the same relationship. Brahmā is self-existent as his epithet svayambhū represents[203]. But when he is subjected to figurative anthropomorphism he is mentioned as caturmukha (Caturānana or caturvaktra)[204]. The Rāmāyaṇa also mentions the origin of Brahmā from the lotus in the navel of Viṣṇu[205] or from the mundane egg[206]. Brahmā lacks the hold of the nature-gods upon popular imagination.

Viṣṇu

Viṣṇu stands with his grandeur and martial haughtiness in the Rāmāyaṇa. Though, he is known as Upendra[207] (junior Indra), he snatches from Indra many of his titles and becomes as lord of the worlds[208]. He is not only the chief of the gods but also glorified as God - the Creation, preservation and annihilation of the universe[209]. He is not only worshipped by the men but also by the gods[210]. Surottama, trilokanātha anādi, akṣaya and avyaya[211] are the popular epithets employed for him. In the epic, the personification of Viṣṇu is the most complete one[212].

Viṣṇu appears as Āryan god in the Rāmāyaṇa and figured as a measurer of earthly regions, wide strider setting down his

foot-steps thrice[213]. The above characteristics reveal him as a form of the sun which by its rays appears to measure the earth, by its three positions (morning, noon and evening) becomes the wider strider and it is famous for illuminating the earth[214]. Visnu is mainly associated with the creation of the universe so he was considered as the god incharge of production and growth of the animate and inaminate objects. It may be pointed out that the sun provides necessary warmth for sprouting and growth. Perhaps, from this he was gradually raised to a higher position with the agricultural development in India, because in the Rigvedic times he is appeared as a minor god and in the Rāmāyanic age he is figured as a supreme god around whom various mythological legends developed. All the legends are based on Visnu's three strides, protection of embryo and the motive power in the evolution of mankind. It is said that he won three worlds from the asuras and gave them to the gods. These asuras appear to be the climatic extremes such as drought and darkness which are overcome by the sun individually or with the help of Indra (the rain god). Three worlds meant the three divisions of the universe, first , the highest heaven where the sun dwelt and secondly and thirdly are the middle region i.e. antariksha and the lower region or the earth. The sun appears from the earth very small in size, hence Visnu was considered as a dwarf. The various incarnations of Viṣṇu (e.g. matsyāvatāra, Vārāhavatāra, Kacchapāvatāra etc.) explain the evolution of life on the one hand and on the other they refer to relieving the agricultural people from the devastating effect of floods and droughts

figured as demons which are of frequent occurrence in India due to climatic capricious[215].

Śiva

In Indian mythology Śiva's career is a very chequered one. He was the god of the Āryas[216] as well as the Anāryas[217]. In the Rāmāyaṇic age, Rudra (fierce god) adopted several forms due to his beneficial and destructive nature and he was named variously such as Paśupati (the lord of beats), Mahādeva (the great god), Hara (seizer), Śiva (Propitious) and Śaṁkara (giver of prosperity)[218]. His one principal epithet is prajādhyaksha[219] but his principal function is the annihilation of the worlds[220]. His fondness for animals can be gathered from his popular epithet paśupati and his favourite conveyance is the bull, nandī and on this account he is known as Vṛiṣadhvaja or Vṛiṣabhadhvaja[221]. His favourite weapons are a bow and a trident, thus referred to as a Pināki and Triśūladhārī or Śūladhārī[222]. He is also known as Tripurārī or Trilocana[223]. Rudra's habitat is a mountainous country of the northern India and he is often described as sporting in the woods and on the peaks of the Himalayas[224]. Saxena[225] is of the opinion that Rudra - the storm god representing tropical cyclones is mild in the Indus basin but assumes furious form in eastern and southern India which is frequently visited by the fully developed tropical cyclones as associated with the monsoon winds. Das[226] has identified Rudra with 'Solar God', presiding over the hottest months of the year, when the sun's rays are fierce, and burn like fire, when men and animals suffer from the effect of

abnormal heat and become sick, when the end of the sultriest day, clouds gather on the horizon and thunder-storms break-out, uprooting trees, blowing down houses, killing men and animals by lightning and presenting a general appearance of devastation. This was the maleficent side of Rudra. His beneficent side consisted of clearing up the atmosphere, blowing away the germs of diseases, cooling down the temperature by showers of rain, improving public health and corn to grow. From these two different aspects, Rudra is known as the most dreadful as well as the most beneficent. As paśupati, he was the god of pastoralists and as Śiva or Śaṁkara he was the god of agriculturists, thus, incorporating two qualities of Aryan economy.

Indra

Indra is the god of precipitation[227]. Indra was important with the Rigvedic people more than with the Rāmāyaṇic people because rain was more valuable in the semi-arid Indus basin than in the humid Gaṅgā valley, therefore, the Rigvedic people considered Indra as their tutelary god. The slaying of Vṛitra (drought demon), by Indra with the help of Viṣṇu (sun)[228] is a climatic fact applying to the Gaṅgā plain. Thus, Indra by slaying Vṛitra removed vagaries of the hot dry period. Since the heavy amount of rain and the speed of the monsoon winds increase in the eastern and southern part of the country, the Aryans living in these parts during the epic age did not recognise as the greatest god. He was gradually overshadowed by Rudra, representing the tropical cyclones[229].

It is to be remembered that in the Rāmāyana, Indra is not the invincible hero of the Rigvedic period. The Rākshasas present themselves as formidable enemies of Indra. They corner him almost at every front, hence, he is found resorting to clandestine means to defeat them instead of facing them in an open fight. Indra is the chief of the gods[230], their leader in battles, the chopper of the wings of the mountains and the benefactor of mankind by bringing rains[231]. He is also known as pākaśāsana[232] (ruler of crops and slayer of pāka demon). ~~This~~ This indicates that he was the god of agriculturists. Indra is armed with bolt which implies both thunder and lightning and known as Vajrī or Vajradhara[233].

Besides Indra, the Rāmāyana also mentions Parjanya[234] as the rain god. In the Rigveda[235], the word Parjanya at first meant simply a rain cloud but later on the word came to mean the god of both thunder and rain. Indra, in later Vedic mythology was the only wielder of the thunder, hence, it is not unreasonable to suppose that Parjanya was the older than Indra himself by whom he was superseded in later times. Parjanya was the god of rain, thunder and lightning of early Aryans, when they had been in a nomadic and pastoral stage and did not settle down as agriculturists. On the other hand, Indra was essentially the god of Aryans when they settled down as agriculturists, when timely rain was required for agricultural operations.

In the Rāmāyana Vāsava rains upon the crops in the fields in due time[236]. Parjanya is Vrishtimata[237] (significantly rainful clouds)[238] and in short Parjanya is the rain-form of Indra,

though given a distinct personality and is regarded as progenitor of the Śarabha[239]. The people are especially mentioned long for parjanya[240]. Thus, Parjanya is the bucolic Indra, chief god of ploughmen; but the greater province remains Indra's. The poet recognises the four lokapālas and Indra is regarded as the lokapāla of the eastern quarter[241].

Varuṇa

The Rāmāyaṇic god Varuṇa, popularly known as pāśahasta is associated with the waters[242]. The passages in which he is bracketed with Indra[243] might be a recollection of the Rigvedic period where he fares as an associated of Indra in wars. He is also a Lokapāla (like Indra, Yama and Kubera) guarding the western cardinal point[244] and his home is placed on the peaks of the Western mountains[245]. Commonly, he is said to be dwelling in the depth of the Rasātala in the waters[246] and ocean is alluded to as the home of Varuṇa[247], so, he is popularly known as Salilendra, Salilarāja and Jaleśvara[248]. Varuṇa was the god of Aryans as well as the Vānaras and they worshipped him as their Supreme deity[249]. The word Varuṇa etymologically means 'that which covers' and in this context waters cover the sea. The mention of the fact in the epic that Mitra (Sun) and Varuṇa lived together[250], indicates the correlation between the oceanic water and sun-heat. The appointment of Varuṇa as the guardian of western direction, concludes the decadence of his popularity among the Aryans due to their dominance in the Gaṅgā plain which bears the regional variation. Though, in the Vedic age, the merchants went on worshipping Varuṇa as their Supreme God, but

there is no such reference available in the Rāmāyaṇa.

Yama

Yama of the Rāmāyaṇa is a Lokapāla guarding the southern cardinal point[251] and variously known as antaka, kāla and mṛityu[252], which are primarily based on the idea of death. He is also named as Dharmarāja, the king of right and justice[253]. His realm is variously known as Yamasadana, Pretarājapura and Yamakshaya[254]. On account of being the common resort of the blessed as well as the accursed it consists of two parts - one for the meritorious and the other for the sinners and the latter is characterised by darkness and absence of happiness. From this, we may conclude that the environmental conditions of the South pole are not favourable for human establishments and vast domain of oceanic water may be seen around the South pole. Besides, when the sun appears in the northern hemisphere, the South pole becomes fully dark for the six months, thus there is absence of happiness.

Kubera

Kubera, more popularly known by his patronymic name Vaiśravaṇa is the son of Viśravā[255]. He also obtained the position of Lokapāla and the guardianship of 'Riches'. Brahmā not only raised his status as Lokapāla but also bestowed him with the aerial car Puṣpaka[256]. The story may be a pointer to the late inclusion of Yaksha worship in the Hindu pantheon and to the late recognition accorded to it by the Āryas. Earlier, the worship was perhaps popular only in the south among the non-Aryan

people of that area. His adoption by the North, perhaps, signifies the worship of a similar god in the northern regions and the assimilation of Kubera cult with that of the northern deity[257].

It may be pointed out here that when Brahmā granted to him the boon, there is no mention of the north. Kubera, first settled as a Lokapāla in Laṅkā (south)[258] and later he was driven out by Rāvaṇa from Laṅkā. Then, he settled with his family on Kailāsa in the north[259]. However, Kubera's guardianship of the north seems to be a settled fact in the Rāmāyaṇa[260]. A large number of the epithets of Kubera refer to his guardianship of wealth. Thus, he is Dhaneśa, Dhaneśvara; Dhanādhyaksha, Dhanarakshaka, Dhanada, Vitteśa and Dhanādhipa[261]. Saṅkha and Padma, the personifications of treasure are his chief assistants[262].

The estate of Dhanada is naturally unique in respect of its richness. His abode is a splendid one on snow-covered Kailāsa. The whole structure of his white mansion is embellished with the settings of gold and resembles in beauty the white clouds[263]. Attached to the palace, caitraratha grove is famous for its beauty[264]. The above description reveals that Himalaya is the store-house of minerals and its surroundings are forested and Aryans had given due importance to the minerals and forests in their daily life and they were very fond of picnics in the gardens or on the hills.

Besides the above mentioned gods, there is a host of other gods mentioned in the Rāmāyaṇa which either represented natural phenomena or abstract ideas imputed to them and it is not possible here to describe the rests.

Transformation of Gods from Vedic to the Rāmāyaṇic Age[265]

Transformation of Gods is the most striking religious aspect of the Rāmāyaṇic age which indicates the regional impact. In the pre-Vedic and Vedic age, Varuṇa is mentioned as the god of sky and later on he was transformed into the Lokapāla guarding the western cardinal point. In the Vedic literature the Sarasvatī is mentioned as holy river as well as a deity and in the Rāmāyaṇa she is mentioned as the goddess of learning. This was mostly due to her kindred banks where learning and ritual performances were developed and intensified. Two facts are noticeable for this transformation - first the disappearance of Sarasvatī due to physical causes and secondly, the Aryans had moved from that land to the east and south and thus, they had fully occupied the Gaṅgā plain which proved equally beneficial to the Aryans. Even today, Sarasvatī is regarded as the goddess of learning in Hindu religion and she is worshipped by the scholars of various disciplines. Similar is the case of the Sindhu - she lost her familiarity and Gaṅgā became the most holy river of the Aryans. In the Vedic age Soma was a divine drink made of Soma plant and later on due to its medicinal qualities he was considered as the lord of vegetation. But in the Rāmāyaṇic age Soma became a synonym of the moon. When the Aryans became fully agriculturists they had regularly performed

offerings and prayers at the time of various agricultural activities to the agricultural deities. In this connection it may be pointed out that Sītā means a furrow and she gradually emerged as a deity of the Aryans with their eastward expansion. In the Rāmāyaṇa, she appeared as a heroine of the epic and the Rāmāyaṇa too relates her descent from the furrow, when Janaka, her father, found her in a furrow while he was himself ploughing his land.

(iii) Religious Ceremonies

The religious practices observed in the Rāmāyaṇic society can be classified under three different categories:

(i) The general rites - The reception of guests and alms.

(ii) The compulsory rites -

(a) The routine rites to be performed every day, and

(b) The special rites and ceremonies to be observed only on special occasions.

(iii) The Optional rites - Consisting of certain distinct rituals which were the privilege of a few in the society and were performed even by them only for the fulfilment of certain definite desires or ambitions.

(i) General Rites

The Reception of the Guests and Alms

In the Rāmāyaṇic society, it was the duty of every house holder to perform the rites of hospitality to a guest, however ordinary the latter might be. At the arrival of a guest the host

was required to offer pādya (water for washing feet), arghya (water for sipping and a few other articles) and a seat along with salutations and greetings[266]. Next, he was to offer him madhuparka or some light refreshment such as fruits[267]. It may also be pointed out here that it was obligatory for the guest to inquire into the welfare of the host, state and subjects (provided that the guest was a brāhmaṇa and the host a kshatriya)[268]. Benevolence, in the sense of charity and kindness is another virtue which is highly extolled by the poet. Rāma is said to have distributed his entire possessions as gifts to the brāhmaṇas and scholars, as alms to the poor, the destitutes, the orphans, servants and dependants[269]. In an Aśvamedha Yajña, liberal charities also formed an important part of its performance and after the accomplishment of the Yajña, large quantities of food, cloth, gold and cows were distributed by the kings[270].

(ii) The Compulsory Rites

(a) Daily Rites

From the remote past, Indians have recognised the importance of Snāna (bath) not only from the point of personal hygiene but also as a primary act conductive to inner purity, therefore, their daily rites began with the morning Snāna which was usually performed before sunrise[271] and Snāna as the priliminary of prayers both morning and evening was considered necessary[272]. The ascetics performed certain religious rites in the noon also for which third bath was recommended in their case[273]. Immediately after Snāna one was required to perform pūrvā-sandhyā and paścimā-sandhyā (facing the sun in the east and west respecti-

vely)[274]. Arghya or Udaka (offering water to sun), Japa (muttering of sacred Gāyatrī mantras) and tarpana[275] formed the principal items of Sandhyā.

In daily rites, the next item was agnihotra (or homa) and it was performed twice in the morning and evening[276]. It was necessary for every householder to maintain the holy fire in which alongwith his wife he used to offer oblaitions of ghrita and cooked food to various Devas and Pitris to the accompaniment of Vedic mantras[277]. Besides, in daily rites, the epic also mentions offerings (bali) to the bhūtas (creatures) in the prescribed manner[278].

(b) Special rites and Ceremonies

Besides the daily routine, one was required to perform certain other rites and ceremonies under certain well defined conditions. Their number must have been considerable but in the epic only two of them have been mentioned viz. the Āgrāyaṇa and the Vāstu-śamana. The Āgrāyaṇa ceremony was performed towards the end of Śaradawhen the new crops were ready. The principal aim of this ceremony was to please the gods and manes to avert any harm in eating the new grains[279]. The Vāstu Śamana was performed before entering a newly built house. It was performed in the honour of the presiding deity of the Śālā (viz. Vāstospati) in which offerings of aineya, māṁsa (cooked meat of the deer) were made. The main object of this rite was the averting of evil. Moreover, it was believed that it brought longevity to the inmates[280].

In addition to the above, the poet mentions various Saṁskāras which a householder was required to perform on certain occasions. The poet displays his familiarity with the jātakarma (birth ceremonies), the nāma-Karaṇa (name giving), the Upanayana (initiation), the Samāvartana (end of studentship), the vivāha (marriage) and the antyeṣṭi (funeral ceremonies). Of these, the upanayan and samāvartana are no where mentioned in the epic but their prevalence must have been in the Rāmāyaṇic society. At the time of jātakarma certain rites were performed by the householder with the object of guarding the offspring against evil spirits[281]. The nāmakaraṇa saṁskāra was performed on the twelfth day after the birth of the child and on this occasion, liberal gifts were distributed among the brāhmaṇas[282]. The Vivāha and Antyeṣṭi are repeatedly mentioned in the Rāmāyaṇa and in this connection, the rites connected with the cremation of the deceased such as aurdh-vadehika, preta-kārya, ahitāgni and śrāddha were variously popular among the Āryans and non-Āryans[283].

Moreover, there are numerous allusions in the epic for Indra-dhvaja festival. It appears, that Indra-dhvaja (or Śakra-dhvaja) was a public festival celebrated on the full moon day of Āśvina[284] (corresponding roughly to the month of September) when the crops were ripe and ready for being reaped. A week earlier than the actual festival a lofty pole decorated with flags and festoons was raised in honour of Indra, the guardian of rain and of agriculture. On the final day the ropes or the other contrivances supporting the pole were removed[285].

(iii) The Optional Rituals

It is well-known fact that in the Rigvedic period Agni (fire)had been the principal medium of worship with the Aryans, and they worshipped various gods like Indra, Varuṇa, Sūrya etc. by offering oblations to Agni. In the Rāmāyaṇic age too, the people recognised three sacred fires[286], and it is clearly indicated that the ascetics living in the forests, regularly performed Śrauta rites as darśa and paurnamāsa[287]. It is to be noted that people living in the town also maintained the sacred fires and brāhmaṇas of Ayodhyā are mentioned as having performed Vājapeya sacrifice[288]. In the Rāmāyaṇa, there are frequent references to various Śrauta sacrifices being performed by Kshatriya kings such as Vājimedha (Hayamedha), Vājapeya, Agniṣṭoma, Atirātra, Gosava, Rājasūya and Puṇḍarīka[289]. We find that every individual who had the resources, took pride in performing these rites and he considered the fulfilment of his life's purpose only in such performances[290].

Of these Śrauta sacrifices, the most important was the Aśvamedha, which a Kshatriya king generally performed towards the fag end of his career for glory and pride[291]. It was a big affair usually extending over several years and required preparations on a massive scale. It was a devout performance and was supposed to bring merit and power to its performer. In the Rāmāyaṇa, Daśaratha and Rāma are said to have performed several Aśvamedhas in their life-time.

These sacrifices were important not only as a religious rites but at the same time they also possessed great economic[292]

and cultural significance. The Kshatriyas were a prosperous community and in order to prevent accumulation of wealth at one place, the performance of periodical sacrifices was enjoined upon them as a religious obligation and thus, liberal distribution of wealth, food and clothes among the poor, beggars, orphans and needy was an important part of such performances[293]. Besides, these sacrifices provided work for a large number of manual labourers, artisans, dancers, actors and musicians[294]. Moreover, these sacrificial sessions went a long way in preserving the cultural unity of this vast land by providing an opportunity to the scholars of the country to assemble at one place and exchange views on points of literary and cultural interests[295].

Other Religious Practices

One of the most striking phase of the Rāmāyaṇic religion was the image worship and the poet has referred to the presence of devāyatanas and caityas[296] in the cities, which were decorated with lofty banners bearing the emblems of the deities and ordinary flags of various colours at the time of religious rites or coronation of a prince[297]. Probably, they were public places. There are also references to separate chambers in the houses in which images of gods were installed and regularly worshipped[298]. Besides, the ascetics living in the forests had also maintained a separate temple in their hermitages for various gods such as - Brahmā, Śiva, Indra, Agni, Vivasvāna, Soma, Bhaga, Kubera, Dhātā, Vidhātā, Vāyu[299]. Moreover, there is no reference for pratimā or murti except in the Uttara Kāṇḍa, where Rāvaṇa is said to

have raised and worshipped a Śivaliṅga[300]. Thus, we can infer the existence of images of gods in the Rāmāyaṇic society.

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8. Rām. III.22.9; III.25.9; VI.60.43; VI.65.38; VI.78.21; VII.7.2; VII.9.29; VII.32.24; VII.34.13.
9. Rām. III.69.30; VI.78.14; III.71.14; VII.9.29; III.70.5; VI.59.25; III.69.34; VI.78.14 and VI.78.14 respectively.
10. Rām. V.17.4-17.
11. "मानुषी मानुषं तं तु रामभि च्छसि शोभने"
    "न मानुषी राक्षसस्य भार्याभवितुमर्हति" ।
    Rām. V.24.5 and 8 respectively (for other references vide Rām. I.16.5-7; III.66.20; VI.17.7,25).
12. Rām. VI.60.32-33,62-63,92. For Food and Drinks of the Aryans and Non-Aryans vide, Food Habits in Ancient India with Special Reference to the Rāmāyaṇic Age, Paper presented in the International Conference on Food Systems of the World by R.K. Shukla and R.C. Agnihotri at Aligarh Muslim University, Aligarh, 15-20 Feb., 1983.

13. The Rākshasas are generally described as piśitāśanas, vide Rām. III.21.2; III.36.3; VI.47.19; VI.61.10.

14. Ram. II.119.19; III.10.6.

15. "सुरा चानीयतां क्षिप्रं सर्वशोक विनाशिनी"।
Rām. V.24.46 and also V.11.22-23,27-28; V.20.35.

16. "स्वधर्मो रक्षसां भीरु सर्वदैव न संशयः।
गमनं व परस्त्रीणां हरणं सम्प्रमथ्य व" ॥ Rām. V.20.5.

17. Rām. IV.17.25,30; IV.37.31; IV.47.5.

18. Rām. IV.33.7,45; V.62.10 ff.

19. "अधर्मो रक्षसां पक्षः" Rām. VI.35.14.

20. Rām. I.16.2; I.15.33; VII.6.8; I.15.21; III.30.12; III.35.9, I.26.22; and VII.5.47 respectively.

21. Kane, P.V., History of Dharma-śāstra, Vol. II, Part I, pp. 25-36 vide Sharma, R. (1971), A Socio-Political Study of the Vālmīki Rāmāyaṇa, p. 14.

22. Rām. I.1.96; I.6.17; I.25.17; II.17.15; II.106.21; IV.4.6; VII.74.15.

23. Viśvāmitra, who was a Kshatriya by birth succeeded in becoming a brahmarṣi. Rām. I. Cantos 57 ff.

24. Rām. I.6.19.

25. Rām. I.6.19.

26. Rām. I.9.12; VII.74.7; I.75.6 and I.1.1 respectively.

27. Rām. II.45.13.

28. Rām. II.45.25.

29. Rām. I.5.23; I.9.13; II.26.13; VII.1.8.

30. Rām. VII.1.8; VII.94.5-10.

31. Rām. I.6.13; VI.36.19.

32. Rām. I.6.12.

33. Rām. I.10.14 Note the word 'Karma' and Vide, Rām. I.48.16,33.

34. Rām. I.14.50-55; I.72.24-25; III.1.6,8.

35. Rām. I.7.1-6.

36. Rām. I.7.4; II.67.4; II.77.21.

37. Rām. II.100.9,14.

38. Rām. I.6.17 and II.1.21 respectively.

39. Rām. I.52.18; II.55.11.

40. Rām. I Canto 9; VII.74.4 ff.

41. Cf. "ब्रह्मक्षत्रमहिंसन्तस्ते कोशं समपूरयन्" । Rām. I.7.13.

42. Rām. II.75.53-54.

43. Cf. Rām. VII.61.8.

44. Rām. II.42.11.

45. Rām. VII.86.2 ff.

46. "इदं राज्यं च सकलं जीवितं च हृदिस्थितम् ।
सर्वमेतदद्विजार्थं मे सत्यमेदब्रवीमि वः ।।" Rām. VII.60.14.

47. 'क्षत्रियैर्ह्यार्यते चापो नार्तशब्दो भवेदिति' । Rām. III.10.3.

48. Cf. Rām. I.1.100.

49. Rām. I.21.7-8.

50. "गोब्राह्मण हितार्थाय" Rām. I.25.15 and I.26.5.

51. Cf. Rām. VII.99.9-19.

52. Rām. II.100.41,47.

53. Rām. II.6.12; II.16.47; II.48.35,37.

54. Rām. II.14.40,52; II.15.2,23; VI.127.4.

55. Rām. I.6.19; I.13.7; II.80.3.

56. Rām. I.6.19 and I.13.20 respectively.

57. Rām. I.58.12.

58. Rām. III.56.18.

59. Rām. I.58.10-11.

60. Vide the account of Triśaṅku. Rām. I.58.9 ff. and cf. also. "कच्चित् त्वां नावजानन्ति याजकाः पतितं यथा" Rām. II.100.28.

61. The word dāśa employed for the boatmen among the Niṣādas is a different word and need not be confused with the dāsas (vide Rām. II.84.7,16; II.85.6; II.89.7,16.18.21).

62. Rām. II.24.3.

63. Rām. I.74.5; II.7.1 (Note-jñāti-dāsī); VII.39.10.

64. Rām. I.54.18,20-23; II.3.25; VI.22.33.

65. Rām. II.15.13,24-25,27; II.16.46; II.84.7,16; II.85.6; II.89.7,16,18,21.

66. Kane, P.V. op.cit. pp. 69-100, vide, Sharma, R. (1971), op.cit., p.24.

67. S.N.Vyas recognises three distinct lines of the Rākshasas, headed by Virādha, Kabandha and Rāvaṇa, respectively. Rāmāyaṇa Kālīna Samāja, p.25. In fact, Virādha and Kabandha were not originally Rākshasas. The former was a Gandharva and the latter a divine being. Vide Rām. III. Canto.3 and III.Canto.71 respectively. Therefore, the classification as mentioned in the text explains the facts better, vide, Sharma, R. (1971), op.cit., pp.270-271.

68. Cf. Rām. III.71.3,8,30.

69. Cf. Rām. III.69.26-32.

70. Compare the following remarks of the E.W.Hopkins in this regard: "In the Rāmāyaṇa the royal Rāksasas are nobler...." and "Even in the Rāma-tale of Mahābhārata, Rāvaṇa, the Chief

Rākṣasa, is less royal human than in Vālmīki's version...." Epic Mythology, (1974), pp.46 and 39 respectively.

71. Vālmīki's attitude towards the Rākshasas can very well be understood from the following passages:

(i) "दीपानां च प्रकाशेन तेजसा रावणस्य च ।
अर्चिर्भिर्भूषणानां च प्रदीप्तेन्यभ्यमन्यत् ।।" Rām. V.9.32.

(ii) 'व्याविद्धुरशनादामाः क्षिप्तोर्य इव वाहिताः ।' Rām. V.9.46.

(iii) 'आसीत् वनमिवोद्धूतं स्त्रीजनं रावणस्य तत् ।' Rām. V.9.65.

(iv) 'पानभूमिर्विना वह्निं प्रदीप्तेवापलक्ष्यत् ।' Rām. V.11.21.

72. It appears that Sālkaṭaṅkaṭā is a personification of the night and is said as Saṅdhyā-putrī (night) vide Rām. VII. 4.20 and the Rākshasas are said as rajanīcaras.

The Rāmāyaṇa mentions that at the time of creation the Prajāpati noted certain beings and asked them to carefully guard the cosmic waters ("आभाष्य वाचा यत्नेन रक्षध्वमिति" Rām. VII.4.11). Of these who were hungry and thirsty said 'We shall protect' and the others said, 'we shall eat' vide, Rām. VII.4.12. At this the Prajāpati told them that the former would be the Rākshasas and the latter, the Yakshas. The Rāmāyaṇa also makes a distinction between the descendants of Sālakaṭaṅkaṭā and of Pulastya.

स्थिता: प्रख्यातवीर्यास्ते वंशे सालकटङ्कटे । Rām. VII.8.23.

ये त्वया निहितास्ते तु पौलस्त्या नाम राक्षसा:।। Rām. VII.8.24.

In this connection it is to be pointed out that mythical line of the Rākshasas is said to have originated from the Prajāpati and 'Paulastyas' are no distinct ground but a continuation of Sālakaṭaṅkaṭā line.

73. Note the word 'मातामह' Rām. VII.25.22; and
'दुहितुः दुहिता या मातृष्वसुः Rām. VII.25.23-24.

74. Rām. V.9.21 ff.

75. Rām. V.6.36-37; V.12.13-14.

76. Rām. V.Canto.14.

77. Rām. IV.25,13,17-18,27-28,30,49,51-53.

78. Rām. IV.26.22 ff.

79. 'ततः स्वस्त्ययनं कृत्वा मन्त्रविद् विजयैषिणी।' Rām. IV.16.12.

80. Rām. V.1.8.

81. Rām. VII.34.18.

82. Rām. IV.38.16; IV.39.43.

83. Rām. IV.7.21; VI.26.16; IV.39.10; IV.2.29; VI.26.13; IV.39.12; VI.26.11 and IV.39.36 respectively.

84. Note पिङ्गाक्ष Rām. IV.53.11; V.1.59.

85. 'दुधुवे च स रोमाणि' Rām. V.1.32.

86. Rām. V.1.34; VI.26.28.

87. Rām. V.45.12-13.

88. Rām. VI.27.40.

89. Rām. V.57.42.

90. Rām. V.10.54.

91. Rām. IV.2.17; IV.54.9; VI.57.9.

92. Rām. IV.17-25,30; IV.37.31; IV.47.5.

93. Rām. IV.33.7,45; V.62.10, 17 ff.

94. Rām. IV.16.15; IV.66.11-12.

95. 'स्फिग्देशेनाति ताम्रेण रराज स महाकपिः।' Rām. V.1.63.

96. Rām. IV.66.12 ff.; VI.30.21 ff.

97. Vyas, S.N. (1967), 'India in the Rāmāyaṇa Age, p.50.

98. 'देवगन्धर्व पुत्राश्च.....' Rām. IV.38.29.

99. Rām. I.17.10; IV.66.8 ff; VI. Cantos 26-27.

100. Rām. IV.38.27-28.

101. 'ताम्राः पीताः सिताः श्वेताः प्रकीर्णाघोरकर्मणः।'
Rām. VI.27.2.

102. Ray, M.N. (1926), An Estimate of the Civilization of the Vānaras as Depicted in the Rāmāyaṇa. Prince of Wales, Saraswati Bhawan Studies, Vol. V, Vide, Sharma, R.(1971), op.cit., p.283, fn.3.

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104. Bulche, C. (1971), Rāma Kathā, Utpatti Aur Vikāsa, pp. 117-118.

105. Rām. II.10.37.

106. Rām. VII.13.21-28.

107. Rām. I.5.14.

108. 'इक्ष्वाकूणामियं भूमिः सशैलवन काननाः।' Rām. IV.18.6.

109. Rām. IV.17.16 ff.

110. Rām. IV.13.13.

111. Das, A.C. (1971) op.cit., p.131.

112. Rām. IV.37.2 ff.

113. Rām. VII.3.26; VII.5.23.

114. Rām. VII.3.27-28.

115. Rām. III.54.26-29; VI.12.12; VII.19.6.

116. Rām. VI.28.33-40.

117. Rām. VI.28.33-40.

118. Rām. VI.26,23-47 and VI.Canto 27.

119. Rām. III.55.14-15.

120. Rām. III.22.8; III.24.23; III.26.35; III.30.31; III.32.1; III.32.12; III.34.9; III.36.8.

121. Rām. VII.101.8.

122. Saxena, D.P. (1960), The Ancient Indian Geography unpublished Ph.D. Thesis, Agra University, Agra, p.430.

123. Ibid, pp. 431-32.

124. Hopkins, E.W. (1974), op.cit., p.57.

125. Rām. III.30.6; V.35.9; VII.37.6.

126. Cf. Rām. V.40.2.

127. Rām. VI.116.28.

128. Rām. VII.97.15 ff.

129. Rām. III.60.10-11.

130. Rām. I.40.14.

131. Rām. VI.74.60.

132. Vide, Rām. IV.5.14; V.13.41; V.53.37; V.54.5; VI.116.19, 23,25-26,29,33-34; VI.117.6; VI.118.2,5,14.

133. Rām. VI.116.26; VI.118.5.

134. Rām. VII.12.20 and IV.5.15 respectively.

135. Rām. IV.13.23.

136. Rām. II.32.2 and VI.10.16 respectively.

137. Rām. VI.118.2.

138. Saxena, D.P. (1960), Ancient Indian Geography, op.cit., p.435.

139. Rām. VI.117.23.

140. Rām. II.52.82-91.

141. Rām. II.89.21.

142. Rām. I.24.10-11.

143. 'शैलराज सुता' and 'शैलेन्द्र तनया' Rām. I.35.21,23.

144. Rām. II.50.16; III.35.7.

145. Rām. I.1.17; V.38.12; VII.37.6.

146. Rām. I. Canto. 39 and 40.

147. Rām. VI.2.23; VI.4.97; VI.19.28-29,39.

148. Rām. II.15.7; VI.128.53-58.

149. Rām. VI.22.26-27.

150. Rām. I.1.17.

151. Rām. IV.42.40-41; VII.25.52.

152. Rām. I.55.12; II.12.74; II.54.38-40; II.94.11-12; V.1.6-7.

153. Rām. I.45.18.

154. 'शैलेन्द्रो हिमवान नाम .....' Rām. I.35.13.

155. Rām. IV.11.12.

156. Rām. I.35.15.

157. Rām. V.1.111 ff.

158. Rām. V.1.122-124.

159. Rām. II.74.24.

160. Rām. I.52.21-23; I.53.2-4.

161. Rām. I.40.13 ff.

162. Rām. IV.43.34 and III.23.24 respectively.

163. Rām. I.45.39.

164. Rām. VI.50.36; III.30.5; VI.50.38; II.105.6; VI.50.45 and VII.8.19 respectively.

165. Rām. VI.34.4 and VI.50.33-34 respectively.

166. Rām. VII.6.63,66 and III.30.5 respectively.

167. Rām. VI.50.33 ff.

168. Rām. III.53.20-21.

169. Rām. III.35.27.28.

170. Rām. II.55.6-7.

171. Rām. I.14.22-23,39.

172. The Nāgas, Pannagas and Uragas are synonymous terms, but occasionally distinctions have been made among them.

173. Rām. III.48.3.

174. Rām. VI.7.4.

175. Rām. III.11.91; IV.41.22; V.1.86.

176. Rām. I.43.17-18.

177. Rām. I.55.12; II.12.74; II.54.39; II.94.11; VI.1.104.

178. Rām. III.35.16,19.

179. Rām. IV.43.23.

180. Rām. VI.71.65.

181. Rām. IV.59.17; VI.79.36.

182. 'दर्शयन्तो महाविद्यां विद्याधर महर्षय:।' Rām. V.1.27.
According to E.W.Hopkins this great wisdom is 'The Yoga trick of dimnishing their size', op.cit., p.175.

183. Rām. II.94.12; IV.43.49; VI.74.44.

184. 'देव कल्पै:' Rām. V.1.6.

185. Rām. V.1.144.

186. Rām. IV.41.38; V.3.5; VII.23.5.

187. Rām. I.43.32,36; I.73.38; VI.90.85,88; VI.107.51,

'ततो देवा सगंधर्वा: सिद्धाश्च परमर्षय:।
भागप्रतिग्रहार्थं वै समवेता यथाविधि॥' Rām. I.15.4.

188. Rām. IV.41.40-42; IV.42.23.

189. Rām. I.15.9; I.16.10; I.18.59; IV.43.32; I.1.1; I.15.22; and III.35.15 respectively.

190. Sharma, R. (1971) op.cit., pp.203-204.

191. Rām. III.35.15,30.

192. Rām. I.14.27; II.25.11.

193. For example Pulastya - Rām. VII.2.4 ff.

194. Sharma, R. (1971) op.cit., p.204.

195. Rām. I.40.5; II.11.13; III.14.14-15.

196. 'प्रजासुखत्वे चन्द्रस्य' Rām. II.2.30; 'विक्रमस्ते यथाविष्णो' Rām. VII.37.5; 'आदित्य इव तेजस्वी लोककान्तः शशी यथा।' Rām. IV.34.28; 'तेजसा भास्करोपमः' Rām. VII.37.6; 'विक्रमेणोपपन्नश्च यथाविष्णुर्महायशाः' Rām. V.34.29; 'रूपवान् सुभगः श्रीमान् कंदर्प इव मूर्तिमान्' Rām. V.34.30.

197. '..... वसुधायाः क्षमागुणैः। बुद्ध्यावृहस्पतेस्तुल्ये वीर्ये साक्षात्च्छतीपतेः।' Rām. II.2.30; 'सत्यवादी मधुरवाग् देवो वाचस्पति र्यथा। . . . . . ' Rām. V.34.29; 'क्षमा ते पृथिवी तुल्या . . . . . ' Rām. VII.37.6; 'क्षमया पृथिवी समः। वृहस्पति समोबुद्ध्या...' Rām. V.35.9; 'शक्रस्येव पराक्रमः . . . . . ' Rām. VI.28.20; 'वक्ता वाचस्पतिर्यथा' Rām. II.2.43; 'बुद्ध्या बृहस्पतेस्तुल्या.. . . . . ' Rām. VII.37.5.

198. Rām. II.48.3 'अश्विना इव रूपेण'
Rām. II.8.31 'अश्विनोरिव सौभ्रात्रं'
Rām. VII.37.5 'रूपं चैवाश्विनोरिव'
Rām. VII.37.6 'वेगस्ते वायुना तुल्यो'
~~Rām. VII.37.6~~
Rām. I.1.19 'धनदेन समस्त्यागे'
Rām. VI.28.20 'मृत्योरिव क्रोधः'
Rām. I.I.13. 'प्रजापतिः श्रीमान् धाता रिपुनिषूदनः'

199. Rām. I.15.5; I.16.4; VI.22.73; VII.13.3.

200. Rām. I.15.5; I.16.4; V.20.13; VI.22.45; VI.117.3; VII.4.9; VII.104.7-8.

201. Rām. V.20.13 and I.2.23 respectively.

202. Rām. V.48.40; I.2.27; V.48.41 and VI.61.19 respectively.

203. Rām. V.48.40; VI.19.9; VI.61.23; VI.63.52; VI.92.28-29.

204. Rām. V.51.44; VII.5.12.

205. Rām. VII.4.9; VII.104.7.

206. Rām. VII.56.7.

207. Rām. VI.117.16.

208. Rām. VI.117.18; VII.6.19; VII.27.10-11.

209. Rām. VI.117.9,14.

210. Rām. VII.85.17,21.

211. Rām. I.29.13

212. Rām. VII.6.30.

213. Rām. I.29.6-9, III.61.24.

214. Saxena, D.P. (1960); op.cit., p.441.

215. Idem.

216. Rām. II.25.43; II.56.31.

217. Rām. VII.31.42-43.

218. Rām. I.43.2; I.36.7; III.65.2; II.25.43 and VI.111.49 respectively.

219. Rām. VII.6.4

220. Rām. VII.6.2.

221. Rām. I.36.15; VI.117.3; VII.4.27.

222. Rām. VI.74.60 and I.45.23 respectively.

223. Rām. V.51.44; VI.117.3; VII.6.3.

224. Rām. I.36.26; IV.37.27-28; IV.43.56.

225. Saxena, D.P. (1960) op.cit., p.443.

226. Das, A.C. (1979) op.cit., p.445.

227. Rām. I.9.18; I.10.29; IV.30.13.

228. Rām. I.24.18; VII.85.10-17.

229. Saxena, D.P. (1960) op.cit., p.445.

230. Note his epithets - सुरश्रेष्ठ Rām. I.48.20; सुरपति I.48.25; देवेश्वर VII.29.12 देवराट V.I.125; देवराज VI.69.7; VI.102.12; सुरेश्वर V.48.3; V.49.13; सुरनायक VI.41.45; देवपति V.57.52.

231. Rām. VII.29.12. ff; V.1.124 and IV.30.13 respectively.

232. Rām. I.60.16; III.19.7; III.30.34.

233. Rām. II.23.32; II.25.34; III.5.24; III.48.24.

234. Rām. I.17.15; II.31.12; III.28.7; VI.120.1; ~~II.31.12; III.28.7;~~ VII.99.13.

235. Rigveda. I.38.9 and 83 vide Das, A.C. (1979), op.cit., pp. 61-63.

236. 'क्षेत्राणि सस्ययुक्तानि काले वर्षति वासव:।' Rām. VII.70.10.

237. Rām. II.1.38.

238. Rām. II.16.31; II.67.9; V.45.7; VI.80.21.

239. Rām. I.17.14.

240. 'त्वामेव हि प्रतीक्षन्ते पर्जन्यमिव कर्षका:।'
Rām. II.112.12 and Cf. Ram. II.3.29; II.31.12; II.67.9.

241. 'पूर्वां दिशं वज्रधरो'
Rām. II.16.24 and Rām. II.91.13; VII.3.18.

242. 'वरुण:पाशहस्तश्च' Rām. V.13.66 and IV.42.45.
Note his epithets - सलिलेन्द्र and जलेश्वर
Rām. VII.23.16,30 and 51.

243. 'महेन्द्र वरुणोपमम्' Rām. III.37.3.

244. 'वरुण: पश्चिमामाशां' Rām. II.16.24 and VI.24.19.

245. Rām. IV.42.42-45.

246. Rām. VII.23.16.

247. Rām. III.54.8; VI.2.23; VI.4.97; VI.19.28,29,39.

248. Rām. VII.23.16; VI.71.34 and VII.23.51 respectively.

249. Rām. II.15.22; II.25.13; II.91.13; V.13.66.

250. Rām. VII.56.12.

251. 'दक्षिणां पातु ते यम:' Rām. II.16.24 also IV.52.7 and VII.3.18.

252. Rām. IV.16.33; VII.103.1 and VII.22.10 respectively.

253. Rām. VII.22.32.

254. Rām. VII.21.1; VII.2[illegible].21 and II.60.3 respectively.

255. Rām. VII.37.8.

256. Rām. VII.3.17-19.

257. Sharma, R. (1971) op.cit. 199-200.

258. Rām. VII.3.26 ff.

259. Rām. VII.11.41,52.

260. Cf. Rām. II.16.24-25.

261. Rām. VII.3.22; VII.11.52; VII.14.20; VII.13.35; VII.15.37; VII.11.28 and VII.13.27 respectively.

262. Rām. VII.15.16

263. Rām. IV.43.20-23.

264. Rām. III.73.8; V.15.11.

265. Saxena, D.P. (1976) op.cit., pp. 116-119.

266. Rām. I.2.25; I.18.44; I.52.2; II.90.6.

267. Rām. I.52.3,16; II.90.6 and Cf. for Madhuparka. II.54.17
Note: Madhuparka was a mixture of curd, honey and clarrified butter (Pāraskara Grihya Sūtra. I.3.5).

268. Rām. I.52.6-9; I.18.15.

269. Rām. II.32.4 ff.

270. Rām. I.14.40 ff.; VII.92.10 ff.

271. Rām. I.23.3; III.8.2.

272. 'तेऽस्तं गते दिनकरे स्नात्वा' Rām. I.31.20 (Evening Snāna) and for morning Snāna vide Ref. No. 271.

273. 'उपस्पृशंस्त्रिषवणं' Rām. II.95.17.

274. 'पूर्वसंध्या'-Rām. I.32.2; II.6.6; 'पश्चिम संध्या'-II.46.13; III.7.22; VII.81.22; VII.82.2.

275. Rām. I.23.3; II.6.6 and I.35.8 respectively.

276. Rām. III.8.3 and I.31.20 respectively.

277. Rām. II.6.1-2.

278. Rām. II.56.29-33.

279. Rām. III.16.6.

280. Rām. II.56.22-32; III.15.25.

281. Rām. VII.66.3 ff.

282. Rām. I.18.21-23.

283. For marriages vide Rām. I, Cantos72-73 and VII. Canto 12. For antyeṣṭi Saṁskāra, vide Rām. II. Canto 76.11 ff. (Daśaratha); III.4.25.ff. (Virādha); III.68.30 ff. (Jatāyu); III.71.31 ff. (Kabandha); IV.25.49 ff (Bāli); VI.111.101 ff. (Rāvaṇa).

284. Rām. IV.16.37.

'इन्द्रध्वज इवोद्धतः पौर्णमास्यां महीतले।
आश्वयुक्त समये मासि गतश्रीको विचेतनः॥'

285. Rām. II.74.36; II.77.9,25.

286. Rām. VII.4.2.

287. Rām. I.53.24.

288. Rām. II.45.21-23.

289. For references. Note - Rām. I.13.1; II.45.22; II.100.8; VI.32.24; VI.128.94; VII.99.9-10.

290. Rām. I.58.19-20; II.4.12-14.

291. 'ततः प्रीतमना राजा प्राप्ययज्ञ मनु-तमम् ।
पापापहं स्वर्नयनं दुस्तरं पार्थिवर्षभैः ॥' Rām. I.14.57-58.

292. Vide Shama Sastry, R. (article) - Sri Rāmchandra Jī Kā Aśvamedha Yajña Aur Usakā Mahattva. Kalyāṇa, Rāmāyaṇāṅka op.cit., pp.129-131.

293. Rām. I.14.43 ff; II.4.12.

294. Rām. I.13.7-8.

295. Rām. I.13.20-21.

296. Rām. II.3.18.

297. Rām. II.3.17-19; II.6.4-5; II.7.4; VI.127.2.

298. Rām. II.3.49; II.4.30; II.20.14.

299. Rām. III.12.17-21.

300. Rām. VII.31.42-43.

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6. Rigveda. V.29.10, vide, Das, A.C. (1979), Ṛgvedic Culture, p. 158, and Saxena, D.P. (1976), Regional Geography of Vedic India, p.31.
7. Rām. II.88.19; III.52.23-24; VI.50.38-39.
8. Rām. III.22.9; III.25.9; VI.60.43; VI.65.38; VI.78.21; VII.7.2; VII.9.29; VII.32.24; VII.34.13.
9. Rām. III.69.30; VI.78.14; III.71.14; VII.9.29; III.70.5; VI.59.25; III.69.34; VI.78.14 and VI.78.14 respectively.
10. Rām. V.17.4-17.
11. "मानुषी मानुषं तं तु रामभि च्छसि शोभने"
    "न मानुषी राक्षसस्य भार्याभवितुमर्हति" ।
    Rām. V.24.5 and 8 respectively (for other references vide Rām. I.16.5-7; III.66.20; VI.17.7,25).
12. Rām. VI.60.32-33,62-63,92. For Food and Drinks of the Aryans and Non-Aryans vide, Food Habits in Ancient India with Special Reference to the Rāmāyaṇic Age, Paper presented in the International Conference on Food Systems of the World by R.K. Shukla and R.C. Agnihotri at Aligarh Muslim University, Aligarh, 15-20 Feb., 1983.

13. The Rākshasas are generally described as piśitāśanas, vide Rām. III.21.2; III.36.3; VI.47.19; VI.61.10.

14. Ram. II.119.19; III.10.6.

15. "सुरा चानीयतां क्षिप्रं सर्वशोक विनाशिनी"।
Rām. V.24.46 and also V.11.22-23,27-28; V.20.35.

16. "स्वधर्मो रक्षसां भीरु सर्वदैव न संशयः।
गमनं व परस्त्रीणां हरणं सम्प्रमथ्य व" ॥ Rām. V.20.5.

17. Rām. IV.17.25,30; IV.37.31; IV.47.5.

18. Rām. IV.33.7,45; V.62.10 ff.

19. "अधर्मो रक्षसां पक्षः" Rām. VI.35.14.

20. Rām. I.16.2; I.15.33; VII.6.8; I.15.21; III.30.12; III.35.9, I.26.22; and VII.5.47 respectively.

21. Kane, P.V., History of Dharma-śāstra, Vol. II, Part I, pp. 25-36 vide Sharma, R. (1971), A Socio-Political Study of the Vālmīki Rāmāyaṇa, p. 14.

22. Rām. I.1.96; I.6.17; I.25.17; II.17.15; II.106.21; IV.4.6; VII.74.15.

23. Viśvāmitra, who was a Kshatriya by birth succeeded in becoming a brahmarṣi. Rām. I. Cantos 57 ff.

24. Rām. I.6.19.

25. Rām. I.6.19.

26. Rām. I.9.12; VII.74.7; I.75.6 and I.1.1 respectively.

27. Rām. II.45.13.

28. Rām. II.45.25.

29. Rām. I.5.23; I.9.13; II.26.13; VII.1.8.

30. Rām. VII.1.8; VII.94.5-10.

31. Rām. I.6.13; VI.36.19.

32. Rām. I.6.12.

33. Rām. I.10.14 Note the word 'Karma' and Vide, Rām. I.48.16,33.

34. Rām. I.14.50-55; I.72.24-25; III.1.6,8.

35. Rām. I.7.1-6.

36. Rām. I.7.4; II.67.4; II.77.21.

37. Rām. II.100.9,14.

38. Rām. I.6.17 and II.1.21 respectively.

39. Rām. I.52.18; II.55.11.

40. Rām. I Canto 9; VII.74.4 ff.

41. Cf. "ब्रह्मक्षत्रमहिंसन्तस्ते कोशं समपूरयन्" । Rām. I.7.13.

42. Rām. II.75.53-54.

43. Cf. Rām. VII.61.8.

44. Rām. II.42.11.

45. Rām. VII.86.2 ff.

46. "इदं राज्यं च सकलं जीवितं च हृदिस्थितम् ।
सर्वमेतदद्विजार्थं मे सत्यमेदब्रवीमि वः ।।" Rām. VII.60.14.

47. 'क्षत्रियैर्ह्यार्यते चापो नार्तशब्दो भवेदिति' । Rām. III.10.3.

48. Cf. Rām. I.1.100.

49. Rām. I.21.7-8.

50. "गोब्राह्मण हितार्थाय" Rām. I.25.15 and I.26.5.

51. Cf. Rām. VII.99.9-19.

52. Rām. II.100.41,47.

53. Rām. II.6.12; II.16.47; II.48.35,37.

54. Rām. II.14.40,52; II.15.2,23; VI.127.4.

55. Rām. I.6.19; I.13.7; II.80.3.

56. Rām. I.6.19 and I.13.20 respectively.

57. Rām. I.58.12.

58. Rām. III.56.18.

59. Rām. I.58.10-11.

60. Vide the account of Triśaṅku. Rām. I.58.9 ff. and cf. also. "कच्चित् त्वां नावजानन्ति याजकाः पतितं यथा" Rām. II.100.28.

61. The word dāśa employed for the boatmen among the Niṣādas is a different word and need not be confused with the dāsas (vide Rām. II.84.7,16; II.85.6; II.89.7,16.18.21).

62. Rām. II.24.3.

63. Rām. I.74.5; II.7.1 (Note-jñāti-dāsī); VII.39.10.

64. Rām. I.54.18,20-23; II.3.25; VI.22.33.

65. Rām. II.15.13,24-25,27; II.16.46; II.84.7,16; II.85.6; II.89.7,16,18,21.

66. Kane, P.V. op.cit. pp. 69-100, vide, Sharma, R. (1971), op.cit., p.24.

67. S.N.Vyas recognises three distinct lines of the Rākshasas, headed by Virādha, Kabandha and Rāvaṇa, respectively. Rāmāyaṇa Kālīna Samāja, p.25. In fact, Virādha and Kabandha were not originally Rākshasas. The former was a Gandharva and the latter a divine being. Vide Rām. III. Canto.3 and III.Canto.71 respectively. Therefore, the classification as mentioned in the text explains the facts better, vide, Sharma, R. (1971), op.cit., pp.270-271.

68. Cf. Rām. III.71.3,8,30.

69. Cf. Rām. III.69.26-32.

70. Compare the following remarks of the E.W.Hopkins in this regard: "In the Rāmāyaṇa the royal Rāksasas are nobler...." and "Even in the Rāma-tale of Mahābhārata, Rāvaṇa, the Chief

Rākṣasa, is less royal human than in Vālmīki's version...." Epic Mythology, (1974), pp.46 and 39 respectively.

71. Vālmīki's attitude towards the Rākshasas can very well be understood from the following passages:

(i) "दीपानां च प्रकाशेन तेजसा रावणस्य च ।
अर्चिर्भिर्भूषणानां च प्रदीप्तेन्यभ्यमन्यत् ।।" Rām. V.9.32.

(ii) 'व्याविद्धुरशनादामाः क्षिप्तोर्य इव वाहिताः ।' Rām. V.9.46.

(iii) 'आसीत् वनमिवोद्धूतं स्त्रीजनं रावणस्य तत् ।' Rām. V.9.65.

(iv) 'पानभूमिर्विना वह्निं प्रदीप्तेवापलक्ष्यत् ।' Rām. V.11.21.

72. It appears that Sālkaṭaṅkaṭā is a personification of the night and is said as Saṅdhyā-putrī (night) vide Rām. VII. 4.20 and the Rākshasas are said as rajanīcaras.

The Rāmāyaṇa mentions that at the time of creation the Prajāpati noted certain beings and asked them to carefully guard the cosmic waters ("आभाष्य वाचा यत्नेन रक्षध्वमिति" Rām. VII.4.11). Of these who were hungry and thirsty said 'We shall protect' and the others said, 'we shall eat' vide, Rām. VII.4.12. At this the Prajāpati told them that the former would be the Rākshasas and the latter, the Yakshas. The Rāmāyaṇa also makes a distinction between the descendants of Sālakaṭaṅkaṭā and of Pulastya.

स्थिता: प्रख्यातवीर्यास्ते वंशे सालकटङ्कटे । Rām. VII.8.23.

ये त्वया निहितास्ते तु पौलस्त्या नाम राक्षसा:।। Rām. VII.8.24.

In this connection it is to be pointed out that mythical line of the Rākshasas is said to have originated from the Prajāpati and 'Paulastyas' are no distinct ground but a continuation of Sālakaṭaṅkaṭā line.

73. Note the word 'मातामह' Rām. VII.25.22; and
'दुहितुः दुहिता या मातृष्वसुः Rām. VII.25.23-24.

74. Rām. V.9.21 ff.

75. Rām. V.6.36-37; V.12.13-14.

76. Rām. V.Canto.14.

77. Rām. IV.25,13,17-18,27-28,30,49,51-53.

78. Rām. IV.26.22 ff.

79. 'ततः स्वस्त्ययनं कृत्वा मन्त्रविद् विजयैषिणी।' Rām. IV.16.12.

80. Rām. V.1.8.

81. Rām. VII.34.18.

82. Rām. IV.38.16; IV.39.43.

83. Rām. IV.7.21; VI.26.16; IV.39.10; IV.2.29; VI.26.13; IV.39.12; VI.26.11 and IV.39.36 respectively.

84. Note पिङ्गाक्ष Rām. IV.53.11; V.1.59.

85. 'दुधुवे च स रोमाणि' Rām. V.1.32.

86. Rām. V.1.34; VI.26.28.

87. Rām. V.45.12-13.

88. Rām. VI.27.40.

89. Rām. V.57.42.

90. Rām. V.10.54.

91. Rām. IV.2.17; IV.54.9; VI.57.9.

92. Rām. IV.17-25,30; IV.37.31; IV.47.5.

93. Rām. IV.33.7,45; V.62.10, 17 ff.

94. Rām. IV.16.15; IV.66.11-12.

95. 'स्फिग्देशेनाति ताम्रेण रराज स महाकपिः।' Rām. V.1.63.

96. Rām. IV.66.12 ff.; VI.30.21 ff.

97. Vyas, S.N. (1967), 'India in the Rāmāyaṇa Age, p.50.

98. 'देवगन्धर्व पुत्राश्च.....' Rām. IV.38.29.

99. Rām. I.17.10; IV.66.8 ff; VI. Cantos 26-27.

100. Rām. IV.38.27-28.

101. 'ताम्राः पीताः सिताः श्वेताः प्रकीर्णाघोरकर्मणः।'
Rām. VI.27.2.

102. Ray, M.N. (1926), An Estimate of the Civilization of the Vānaras as Depicted in the Rāmāyaṇa. Prince of Wales, Saraswati Bhawan Studies, Vol. V, Vide, Sharma, R.(1971), op.cit., p.283, fn.3.

103. Vaidya, C.V. (1906), The Riddle of the Rāmāyaṇa, p.153.

104. Bulche, C. (1971), Rāma Kathā, Utpatti Aur Vikāsa, pp. 117-118.

105. Rām. II.10.37.

106. Rām. VII.13.21-28.

107. Rām. I.5.14.

108. 'इक्ष्वाकूणामियं भूमिः सशैलवन काननाः।' Rām. IV.18.6.

109. Rām. IV.17.16 ff.

110. Rām. IV.13.13.

111. Das, A.C. (1971) op.cit., p.131.

112. Rām. IV.37.2 ff.

113. Rām. VII.3.26; VII.5.23.

114. Rām. VII.3.27-28.

115. Rām. III.54.26-29; VI.12.12; VII.19.6.

116. Rām. VI.28.33-40.

117. Rām. VI.28.33-40.

118. Rām. VI.26,23-47 and VI.Canto 27.

119. Rām. III.55.14-15.

120. Rām. III.22.8; III.24.23; III.26.35; III.30.31; III.32.1; III.32.12; III.34.9; III.36.8.

121. Rām. VII.101.8.

122. Saxena, D.P. (1960), The Ancient Indian Geography unpublished Ph.D. Thesis, Agra University, Agra, p.430.

123. Ibid, pp. 431-32.

124. Hopkins, E.W. (1974), op.cit., p.57.

125. Rām. III.30.6; V.35.9; VII.37.6.

126. Cf. Rām. V.40.2.

127. Rām. VI.116.28.

128. Rām. VII.97.15 ff.

129. Rām. III.60.10-11.

130. Rām. I.40.14.

131. Rām. VI.74.60.

132. Vide, Rām. IV.5.14; V.13.41; V.53.37; V.54.5; VI.116.19, 23,25-26,29,33-34; VI.117.6; VI.118.2,5,14.

133. Rām. VI.116.26; VI.118.5.

134. Rām. VII.12.20 and IV.5.15 respectively.

135. Rām. IV.13.23.

136. Rām. II.32.2 and VI.10.16 respectively.

137. Rām. VI.118.2.

138. Saxena, D.P. (1960), Ancient Indian Geography, op.cit., p.435.

139. Rām. VI.117.23.

140. Rām. II.52.82-91.

141. Rām. II.89.21.

142. Rām. I.24.10-11.

143. 'शैलराज सुता' and 'शैलेन्द्र तनया' Rām. I.35.21,23.

144. Rām. II.50.16; III.35.7.

145. Rām. I.1.17; V.38.12; VII.37.6.

146. Rām. I. Canto. 39 and 40.

147. Rām. VI.2.23; VI.4.97; VI.19.28-29,39.

148. Rām. II.15.7; VI.128.53-58.

149. Rām. VI.22.26-27.

150. Rām. I.1.17.

151. Rām. IV.42.40-41; VII.25.52.

152. Rām. I.55.12; II.12.74; II.54.38-40; II.94.11-12; V.1.6-7.

153. Rām. I.45.18.

154. 'शैलेन्द्रो हिमवान नाम .....' Rām. I.35.13.

155. Rām. IV.11.12.

156. Rām. I.35.15.

157. Rām. V.1.111 ff.

158. Rām. V.1.122-124.

159. Rām. II.74.24.

160. Rām. I.52.21-23; I.53.2-4.

161. Rām. I.40.13 ff.

162. Rām. IV.43.34 and III.23.24 respectively.

163. Rām. I.45.39.

164. Rām. VI.50.36; III.30.5; VI.50.38; II.105.6; VI.50.45 and VII.8.19 respectively.

165. Rām. VI.34.4 and VI.50.33-34 respectively.

166. Rām. VII.6.63,66 and III.30.5 respectively.

167. Rām. VI.50.33 ff.

168. Rām. III.53.20-21.

169. Rām. III.35.27.28.

170. Rām. II.55.6-7.

171. Rām. I.14.22-23,39.

172. The Nāgas, Pannagas and Uragas are synonymous terms, but occasionally distinctions have been made among them.

173. Rām. III.48.3.

174. Rām. VI.7.4.

175. Rām. III.11.91; IV.41.22; V.1.86.

176. Rām. I.43.17-18.

177. Rām. I.55.12; II.12.74; II.54.39; II.94.11; VI.1.104.

178. Rām. III.35.16,19.

179. Rām. IV.43.23.

180. Rām. VI.71.65.

181. Rām. IV.59.17; VI.79.36.

182. 'दर्शयन्तो महाविद्यां विद्याधर महर्षय:।' Rām. V.1.27.
According to E.W.Hopkins this great wisdom is 'The Yoga trick of dimnishing their size', op.cit., p.175.

183. Rām. II.94.12; IV.43.49; VI.74.44.

184. 'देव कल्पै:' Rām. V.1.6.

185. Rām. V.1.144.

186. Rām. IV.41.38; V.3.5; VII.23.5.

187. Rām. I.43.32,36; I.73.38; VI.90.85,88; VI.107.51,

'ततो देवा सगंधर्वा: सिद्धाश्च परमर्षय:।
भागप्रतिग्रहार्थं वै समवेता यथाविधि॥' Rām. I.15.4.

188. Rām. IV.41.40-42; IV.42.23.

189. Rām. I.15.9; I.16.10; I.18.59; IV.43.32; I.1.1; I.15.22; and III.35.15 respectively.

190. Sharma, R. (1971) op.cit., pp.203-204.

191. Rām. III.35.15,30.

192. Rām. I.14.27; II.25.11.

193. For example Pulastya - Rām. VII.2.4 ff.

194. Sharma, R. (1971) op.cit., p.204.

195. Rām. I.40.5; II.11.13; III.14.14-15.

196. 'प्रजासुखत्वे चन्द्रस्य' Rām. II.2.30; 'विक्रमस्ते यथाविष्णो' Rām. VII.37.5; 'आदित्य इव तेजस्वी लोककान्तः शशी यथा।' Rām. IV.34.28; 'तेजसा भास्करोपमः' Rām. VII.37.6; 'विक्रमेणोपपन्नश्च यथाविष्णुर्महायशाः' Rām. V.34.29; 'रूपवान् सुभगः श्रीमान् कंदर्प इव मूर्तिमान्' Rām. V.34.30.

197. '..... वसुधायाः क्षमागुणैः। बुद्ध्यावृहस्पतेस्तुल्ये वीर्ये साक्षात्च्छतीपतेः।' Rām. II.2.30; 'सत्यवादी मधुरवाग् देवो वाचस्पति र्यथा। . . . . . ' Rām. V.34.29; 'क्षमा ते पृथिवी तुल्या . . . . . ' Rām. VII.37.6; 'क्षमया पृथिवी समः। वृहस्पति समोबुद्ध्या...' Rām. V.35.9; 'शक्रस्येव पराक्रमः . . . . . ' Rām. VI.28.20; 'वक्ता वाचस्पतिर्यथा' Rām. II.2.43; 'बुद्ध्या बृहस्पतेस्तुल्या.. . . . . ' Rām. VII.37.5.

198. Rām. II.48.3 'अश्विना इव रूपेण'
Rām. II.8.31 'अश्विनोरिव सौभ्रात्रं'
Rām. VII.37.5 'रूपं चैवाश्विनोरिव'
Rām. VII.37.6 'वेगस्ते वायुना तुल्यो'
~~Rām. VII.37.6~~
Rām. I.1.19 'धनदेन समस्त्यागे'
Rām. VI.28.20 'मृत्योरिव क्रोधः'
Rām. I.I.13. 'प्रजापतिः श्रीमान् धाता रिपुनिषूदनः'

199. Rām. I.15.5; I.16.4; VI.22.73; VII.13.3.

200. Rām. I.15.5; I.16.4; V.20.13; VI.22.45; VI.117.3; VII.4.9; VII.104.7-8.

201. Rām. V.20.13 and I.2.23 respectively.

202. Rām. V.48.40; I.2.27; V.48.41 and VI.61.19 respectively.

203. Rām. V.48.40; VI.19.9; VI.61.23; VI.63.52; VI.92.28-29.

204. Rām. V.51.44; VII.5.12.

205. Rām. VII.4.9; VII.104.7.

206. Rām. VII.56.7.

207. Rām. VI.117.16.

208. Rām. VI.117.18; VII.6.19; VII.27.10-11.

209. Rām. VI.117.9,14.

210. Rām. VII.85.17,21.

211. Rām. I.29.13

212. Rām. VII.6.30.

213. Rām. I.29.6-9, III.61.24.

214. Saxena, D.P. (1960); op.cit., p.441.

215. Idem.

216. Rām. II.25.43; II.56.31.

217. Rām. VII.31.42-43.

218. Rām. I.43.2; I.36.7; III.65.2; II.25.43 and VI.111.49 respectively.

219. Rām. VII.6.4

220. Rām. VII.6.2.

221. Rām. I.36.15; VI.117.3; VII.4.27.

222. Rām. VI.74.60 and I.45.23 respectively.

223. Rām. V.51.44; VI.117.3; VII.6.3.

224. Rām. I.36.26; IV.37.27-28; IV.43.56.

225. Saxena, D.P. (1960) op.cit., p.443.

226. Das, A.C. (1979) op.cit., p.445.

227. Rām. I.9.18; I.10.29; IV.30.13.

228. Rām. I.24.18; VII.85.10-17.

229. Saxena, D.P. (1960) op.cit., p.445.

230. Note his epithets - सुरश्रेष्ठ Rām. I.48.20; सुरपति I.48.25; देवेश्वर VII.29.12 देवराट V.I.125; देवराज VI.69.7; VI.102.12; सुरेश्वर V.48.3; V.49.13; सुरनायक VI.41.45; देवपति V.57.52.

231. Rām. VII.29.12. ff; V.1.124 and IV.30.13 respectively.

232. Rām. I.60.16; III.19.7; III.30.34.

233. Rām. II.23.32; II.25.34; III.5.24; III.48.24.

234. Rām. I.17.15; II.31.12; III.28.7; VI.120.1; ~~II.31.12; III.28.7;~~ VII.99.13.

235. Rigveda. I.38.9 and 83 vide Das, A.C. (1979), op.cit., pp. 61-63.

236. 'क्षेत्राणि सस्ययुक्तानि काले वर्षति वासव:।' Rām. VII.70.10.

237. Rām. II.1.38.

238. Rām. II.16.31; II.67.9; V.45.7; VI.80.21.

239. Rām. I.17.14.

240. 'त्वामेव हि प्रतीक्षन्ते पर्जन्यमिव कर्षका:।'
Rām. II.112.12 and Cf. Ram. II.3.29; II.31.12; II.67.9.

241. 'पूर्वां दिशं वज्रधरो'
Rām. II.16.24 and Rām. II.91.13; VII.3.18.

242. 'वरुण:पाशहस्तश्च' Rām. V.13.66 and IV.42.45.
Note his epithets - सलिलेन्द्र and जलेश्वर
Rām. VII.23.16,30 and 51.

243. 'महेन्द्र वरुणोपमम्' Rām. III.37.3.

244. 'वरुण: पश्चिमामाशां' Rām. II.16.24 and VI.24.19.

245. Rām. IV.42.42-45.

246. Rām. VII.23.16.

247. Rām. III.54.8; VI.2.23; VI.4.97; VI.19.28,29,39.

248. Rām. VII.23.16; VI.71.34 and VII.23.51 respectively.

249. Rām. II.15.22; II.25.13; II.91.13; V.13.66.

250. Rām. VII.56.12.

251. 'दक्षिणां पातु ते यम:' Rām. II.16.24 also IV.52.7 and VII.3.18.

252. Rām. IV.16.33; VII.103.1 and VII.22.10 respectively.

253. Rām. VII.22.32.

254. Rām. VII.21.1; VII.2[illegible].21 and II.60.3 respectively.

255. Rām. VII.37.8.

256. Rām. VII.3.17-19.

257. Sharma, R. (1971) op.cit. 199-200.

258. Rām. VII.3.26 ff.

259. Rām. VII.11.41,52.

260. Cf. Rām. II.16.24-25.

261. Rām. VII.3.22; VII.11.52; VII.14.20; VII.13.35; VII.15.37; VII.11.28 and VII.13.27 respectively.

262. Rām. VII.15.16

263. Rām. IV.43.20-23.

264. Rām. III.73.8; V.15.11.

265. Saxena, D.P. (1976) op.cit., pp. 116-119.

266. Rām. I.2.25; I.18.44; I.52.2; II.90.6.

267. Rām. I.52.3,16; II.90.6 and Cf. for Madhuparka. II.54.17
Note: Madhuparka was a mixture of curd, honey and clarrified butter (Pāraskara Grihya Sūtra. I.3.5).

268. Rām. I.52.6-9; I.18.15.

269. Rām. II.32.4 ff.

270. Rām. I.14.40 ff.; VII.92.10 ff.

271. Rām. I.23.3; III.8.2.

272. 'तेऽस्तं गते दिनकरे स्नात्वा' Rām. I.31.20 (Evening Snāna) and for morning Snāna vide Ref. No. 271.

273. 'उपस्पृशंस्त्रिषवणं' Rām. II.95.17.

274. 'पूर्वसंध्या'-Rām. I.32.2; II.6.6; 'पश्चिम संध्या'-II.46.13; III.7.22; VII.81.22; VII.82.2.

275. Rām. I.23.3; II.6.6 and I.35.8 respectively.

276. Rām. III.8.3 and I.31.20 respectively.

277. Rām. II.6.1-2.

278. Rām. II.56.29-33.

279. Rām. III.16.6.

280. Rām. II.56.22-32; III.15.25.

281. Rām. VII.66.3 ff.

282. Rām. I.18.21-23.

283. For marriages vide Rām. I, Cantos72-73 and VII. Canto 12. For antyeṣṭi Saṁskāra, vide Rām. II. Canto 76.11 ff. (Daśaratha); III.4.25.ff. (Virādha); III.68.30 ff. (Jatāyu); III.71.31 ff. (Kabandha); IV.25.49 ff (Bāli); VI.111.101 ff. (Rāvaṇa).

284. Rām. IV.16.37.

'इन्द्रध्वज इवोद्धतः पौर्णमास्यां महीतले।
आश्वयुक्त समये मासि गतश्रीको विचेतनः॥'

285. Rām. II.74.36; II.77.9,25.

286. Rām. VII.4.2.

287. Rām. I.53.24.

288. Rām. II.45.21-23.

289. For references. Note - Rām. I.13.1; II.45.22; II.100.8; VI.32.24; VI.128.94; VII.99.9-10.

290. Rām. I.58.19-20; II.4.12-14.

291. 'ततः प्रीतमना राजा प्राप्ययज्ञ मनु-तमम् ।
पापापहं स्वर्नयनं दुस्तरं पार्थिवर्षभैः ॥' Rām. I.14.57-58.

292. Vide Shama Sastry, R. (article) - Sri Rāmchandra Jī Kā Aśvamedha Yajña Aur Usakā Mahattva. Kalyāṇa, Rāmāyaṇāṅka op.cit., pp.129-131.

293. Rām. I.14.43 ff; II.4.12.

294. Rām. I.13.7-8.

295. Rām. I.13.20-21.

296. Rām. II.3.18.

297. Rām. II.3.17-19; II.6.4-5; II.7.4; VI.127.2.

298. Rām. II.3.49; II.4.30; II.20.14.

299. Rām. III.12.17-21.

300. Rām. VII.31.42-43.